



BHARATHIDASAN UNIVERSITY

TIRUCHIRAPPALLI-620 024

TAMIL NADU, INDIA

Programme: MSW

Course Title : Health and Hygiene

Course Code : CC-11b

UNIT IV

COMMUNICABLE DISEASES

Dr.D.Nirmala

Associate professor

Department of Social Work

UNIT IV

- Communicable diseases: Clinical features, causes, prevention, and treatment of Respiratory Infections: Chickenpox, Influenza, Acute Respiratory Infections, SARS, COVID-19, and Tuberculosis. Intestinal Infections: Viral Hepatitis, Acute diarrhoeal disease, Cholera, Typhoid, Food Poisoning, Amoebiasis, and Hookworm infections Arthropod-Borne Infections: Dengue, Malaria, And Lymphatic Filariasis, Zoonoses: Nipah Virus Infection, Chikungunya, Brucellosis, Surface Infections: STD, AIDS.
- Non-Communicable Diseases: Clinical features, causes, prevention, and treatment of Cardiovascular Diseases, Coronary heart disease, Hypertension, Stroke, Rheumatic Heart Disease, Cancer, Diabetes, Obesity, Blindness, Oral Diseases, Accident, and Injuries.

CORONA VIRUS DISEASE

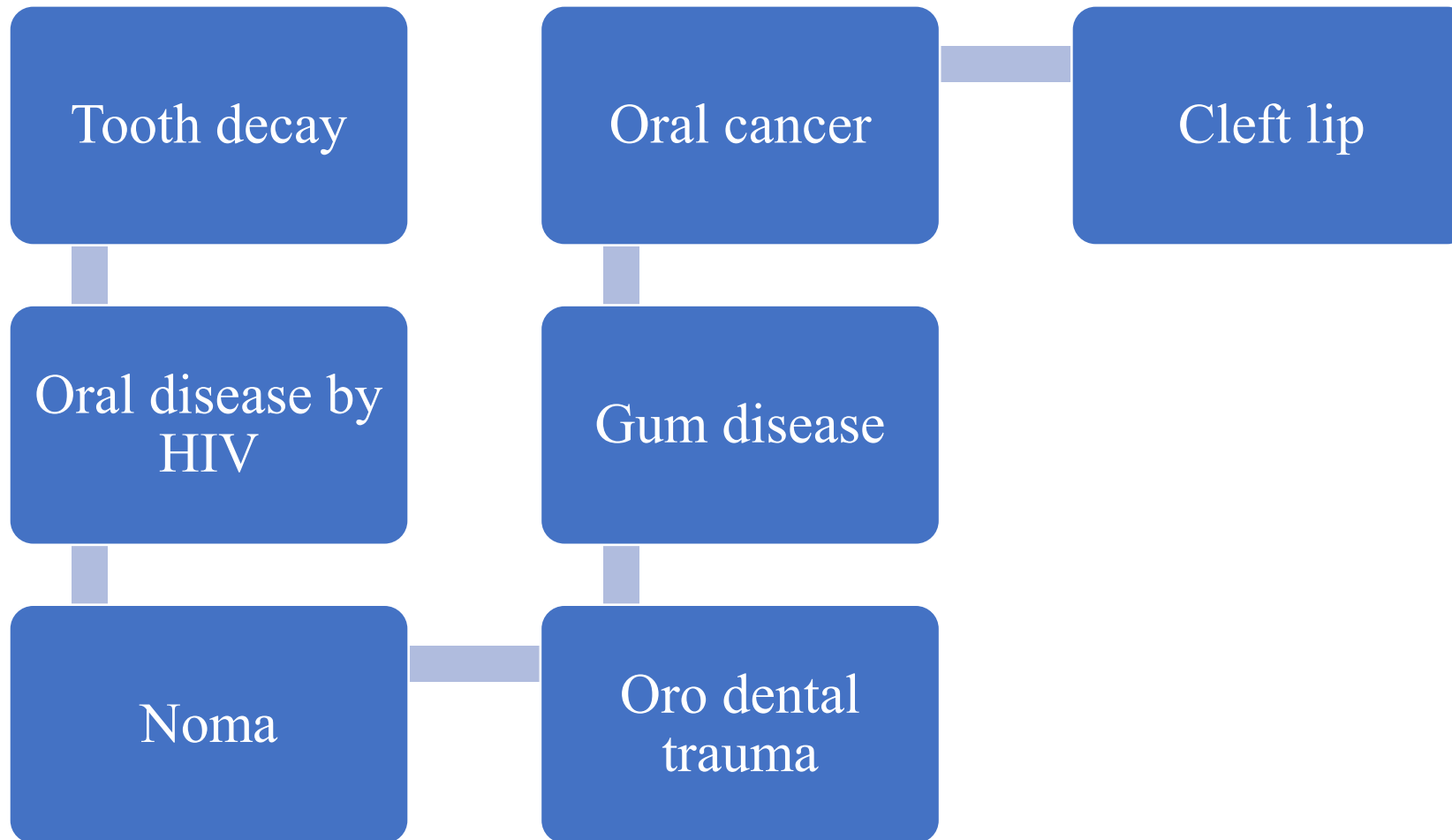
COVID - 19

ORAL DISEASES

ORAL

- Oral disease are the most common non communicable disease and effect people throughout their lifetime causing pain discomfort this figure meant and even
- Oral health is a key indicator of overall health and wellbeing and quality of life
- ‘A state of being free from chronic mouth and facial pain oral and throat cancer oral infection and sores periodontal gum disease to decay tooth loss and other disease and disorders that limit an individual’s capacity in biting, chewing, smiling, speaking and psychosocial wellbeing’ (WHO)
- Seven oral diseases and conditions account for most of the oral disease burden
- Heavy marketing of sugars, tobacco and alcohol leads to growing prevalence of oral disease

TYPES OF ORAL DISEASES



Tooth Decay

- Microbial biofilm (plaque) formed on the tooth surface and convert free sugars contained food and drinks into acid
- It dissolve tooth enamel and dentine
- High intake of sugars without removing of biofilm destroy the tooth structure
- Developing the cavities and pain in root
- Advanced stage of tooth loss and infection

Gum Disease

- Affect the tissues in both surrounded and supported tooth
- Often presents are bleeding and swollen
- Pain and bad breath
- Severe stage leads to lose of tooth and supporting bone
- Poor oral hygiene and tobacco use are the prime reason

Tooth Loss

- Dental caries and gum diseases are the major cause
- Particularly seen in elder people
- Leading factor of disability
- Especially in high income country

Oral Cancer

- Cancer in lip and all sub site of oral cavity
- More common in men
- Ranked as among the three top cancer
- Tobacco, alcohol and areca use are the major factor
- HPV is another cause of growing prevalence among young people
- Prevalence is high among Asian – Pacific countries

ORAL MANIFESTATION BY HIV

- Common among 30 – 80% of HIV infected cases
- It include fungal, bacteria or viral infections
- Cause pain, discomfort, dry mouth eating restrictions and infections
- Early detection of HIV is important
- Treatment will be helpful for improve overall oral health hygiene and quality
- Early diagnosis is very important

Oro – dental trauma

- Impact injury to teeth or tissues
- Several factors such as caused by oral dental trauma
- Environmental factors, risk taking behavior, violence etc
- Treatment is sometimes costly or lengthy
- Leads to tooth loss
- Complication for facial and psychological development and quality of life

Cleft lip

- Heterogeneous disorders that affect the lips and oral cavity.
- Affecting more than 1 in 1000 new born babies around the world
- Genetic predisposition, poor maternal nutrition, tobacco consumption, alcohol and obesity (during pregnancy) major risk factors
- It can be completely treatable by surgery
- Complete rehabilitation is possible

NOMA

- Necrotizing disease that affecting children between the age of 2 and 6 years suffering malnutrition and affected by any infectious disease
- It start at inside the soft tissues of mouth
- Treatment is available, without treatment it will uncontrollable
- It determined in early stage progression can be controlled by the practice of hygiene, antibiotics and nutritional practice
- Survivors can face difficulty in eating and speaking some times

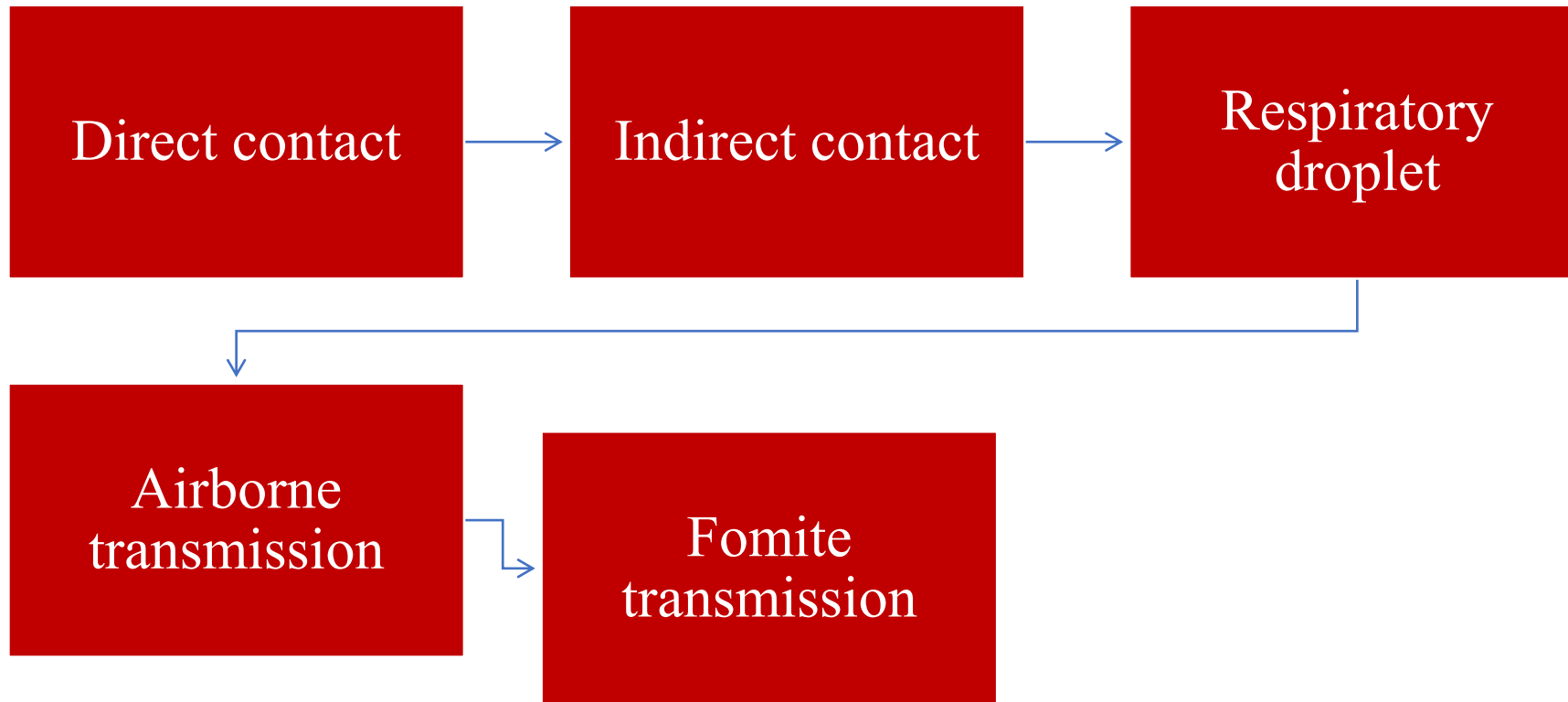
PREVENTION

- Lower the intake of sugar to prevent premature tooth loss
- Intake of adequate fruits and vegetables
- Reduce smoking tobacco and consumption of alcohol
- Use protective equipments while riding vehicles and sports
- Practice good oral hygiene
- Brush twice in a day
- Maintain overall healthy practices

COVID – 19

- Coronavirus disease (COVID – 19) is caused by SARS-CoV-2, a newly emerged coronavirus was first recognized in Wuhan, China in December 2019
- Genetic Sequencing of the virus suggests that it is a beatacoronavirus closely link to SAARC virus
- It is from the family of single standard RNA virus.
- It is a Crown like appearance under an electronic microscope of approximately 60 - 140 NM diameter, it contains large widely spread club or pethal shaped spikes
- High temperature decreases the replication of virus but it can resist the cold temperature
- It is sensitive to ultraviolet rays and is effectively inactivated by lipid solvents including ether, ethanol, chlorine- containing disinfectants, peroxyacetic acid and chloroform except for chlorhexidine

Mode of transmission



Period of communicability

- Incubation period is 2 – 14 days
- Covid – 19 can be detected in people 1 – 3 days before their symptoms appear
- Highest viral loads as measured by RT-PCR Test
- Duration of RT-PCR positivity generally appears to be 1 – 2 weeks for asymptomatic persons and up to 3 weeks or more for patients with mild to moderate diseases
- In patients with severe Covid – 19 disease, it can be longer
- 9 – 13 days long secondary cases of Covid cases

Case definition

Suspect Case

- A patient with acute respiratory illness (fever and least one sign/symptoms of respiratory diseases ex cough/ shortness of breath)
- History of travel to a residence in a country or area or territory reporting local transmission of Covid-19 DC during the 14 days prior to symptom onset
- A patient or Health Care worker with any acute respiratory illness and having been in contact with the confirmed covid-19 case in the last 14 days prior to onset of symptoms.
- A case for whom testing for Covid – 19 is inconclusive
- A patient with severe acute respiratory infection and requiring hospitalization .

Definition of contact

- providing direct care without proper personal protective equipment for Covid 19 patient
- Staging in the same close environment of a Covid- 19 patient
- travelling together in close proximity with the symptomatic person who later tested positive for covid-19
- Based on the medical terminology contact can be classified into two such as **HIGH RISK CONTACT** AND **LOW RISK CONTACT**

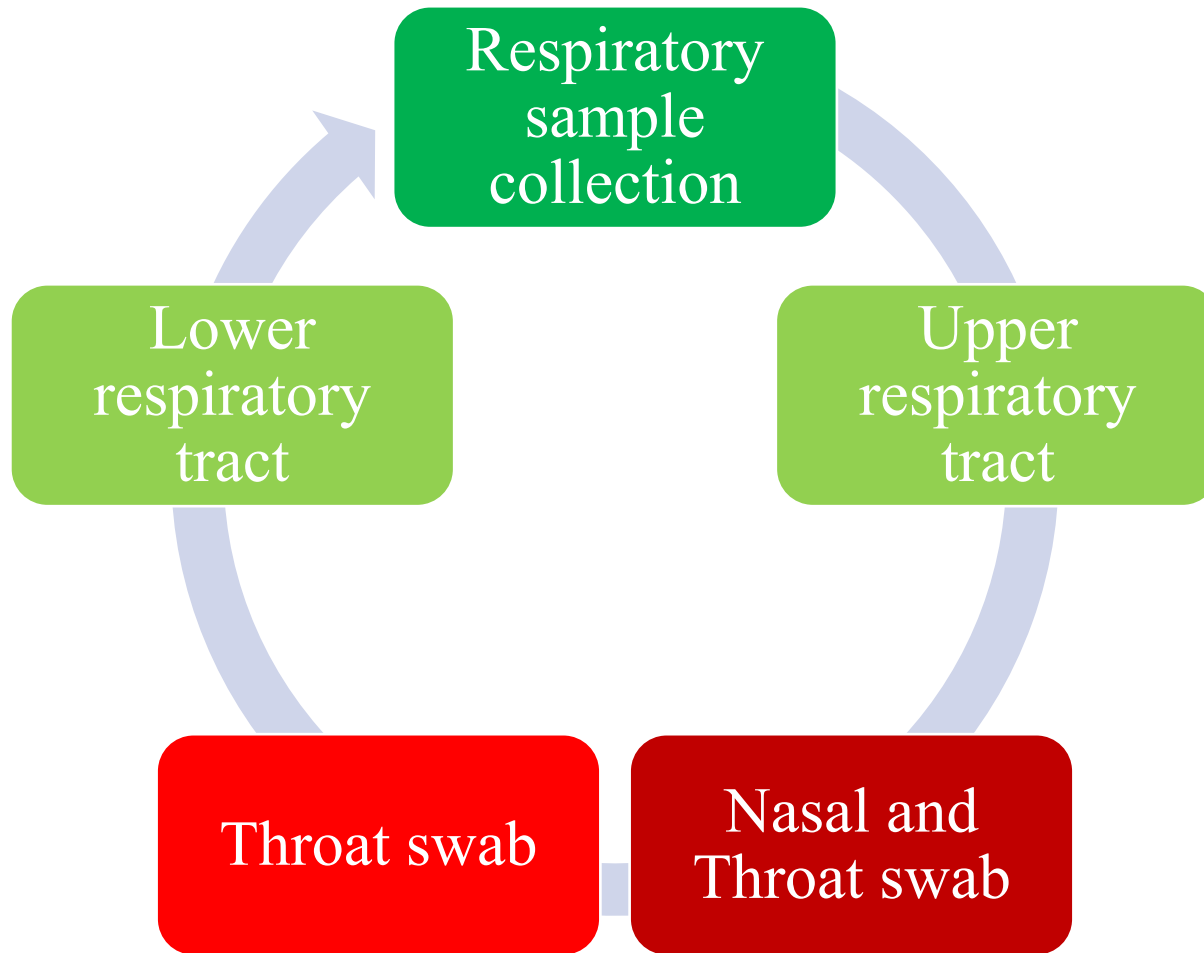
High risk contact

- Touched body Fluids of the patient (respiratory tract secretions, blood, vomit, saliva, urine faeces)
- Had direct physical contact with the body of the patient including physical examination without PPE
- Touched or cleaned the linens, cloths or dishes of the patient.
- Lives in the same household of the patient.
- Anyone in close proximity of the confirmed case without precautions
- Passenger in close proximity of a conveyance with the symptomatic person who later tested positive for covid-19 for more than 6 hours.

Low risk contact

- Shared the same space ,same class for school or worked in same room and not having high risk exposure to confirmed or suspect case of covid 19
- Traveled in same environment like bus, train Flight, anymore of transportation, but no having a high risk exposure of covid - 19.

Diagnosis of covid – 19 (molecular test)



NUCLEIC ACID AMPLIFICATION TEST

REVERSE TRANSCRIPTASE POLYMERASE CHAIN REACTION (RT-PCR)

- Aims to detect viral nucleic acids
- Standard test for confirming Covid – 19

ANTIGEN TEST

- Detect viral antigens in nasal or nasopharyngeal swab
- Primary test for Covid – 19

SEROLOGIC OR ANTI BODY TEST

- Used to detect the presence of virus in the body

CHEST IMAGING

CHEST X RAY EXAM

- Detecting the complete capacity of the lungs
- Covid may manifest itself as pneumonia, radiological imaging fundamentally testing the capacity

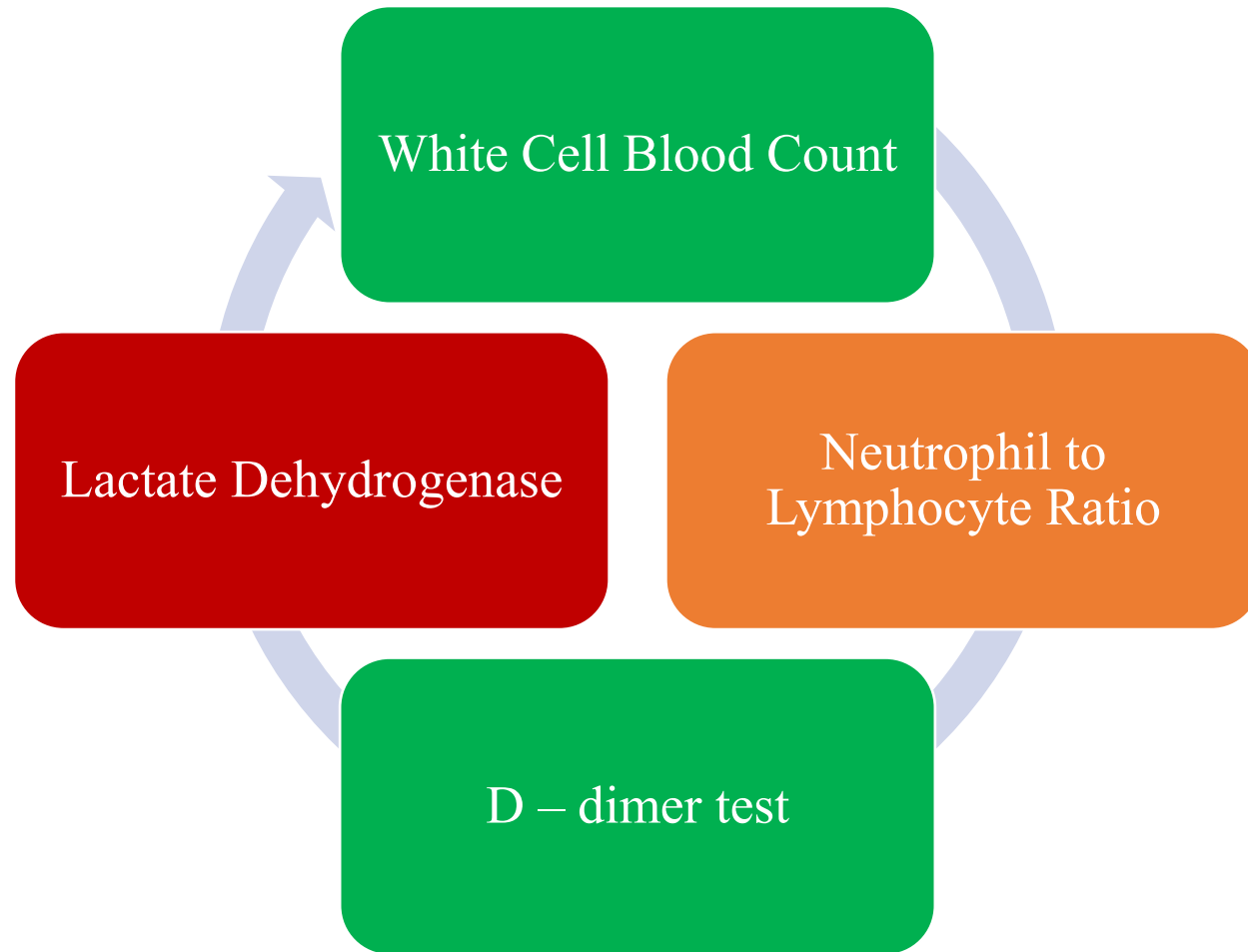
CHEST COMPUTED TOMOGRAPHY

- High sensitivity method of chest examine
- It mainly diagnose the peripheral/subpleural greater involvement of the posterior regions and lower lobes

LUNG ULTRASOUND

- Detecting the evolution of diseases from a focal interstitial pattern up to white lung
- Must done within the first 24 hours in the suspect and every 24/48 hours

LABORATORY EXAMINATIONS



SYMPTOMS

MILD

- Fever
- Uncomplicated upper respiratory tract

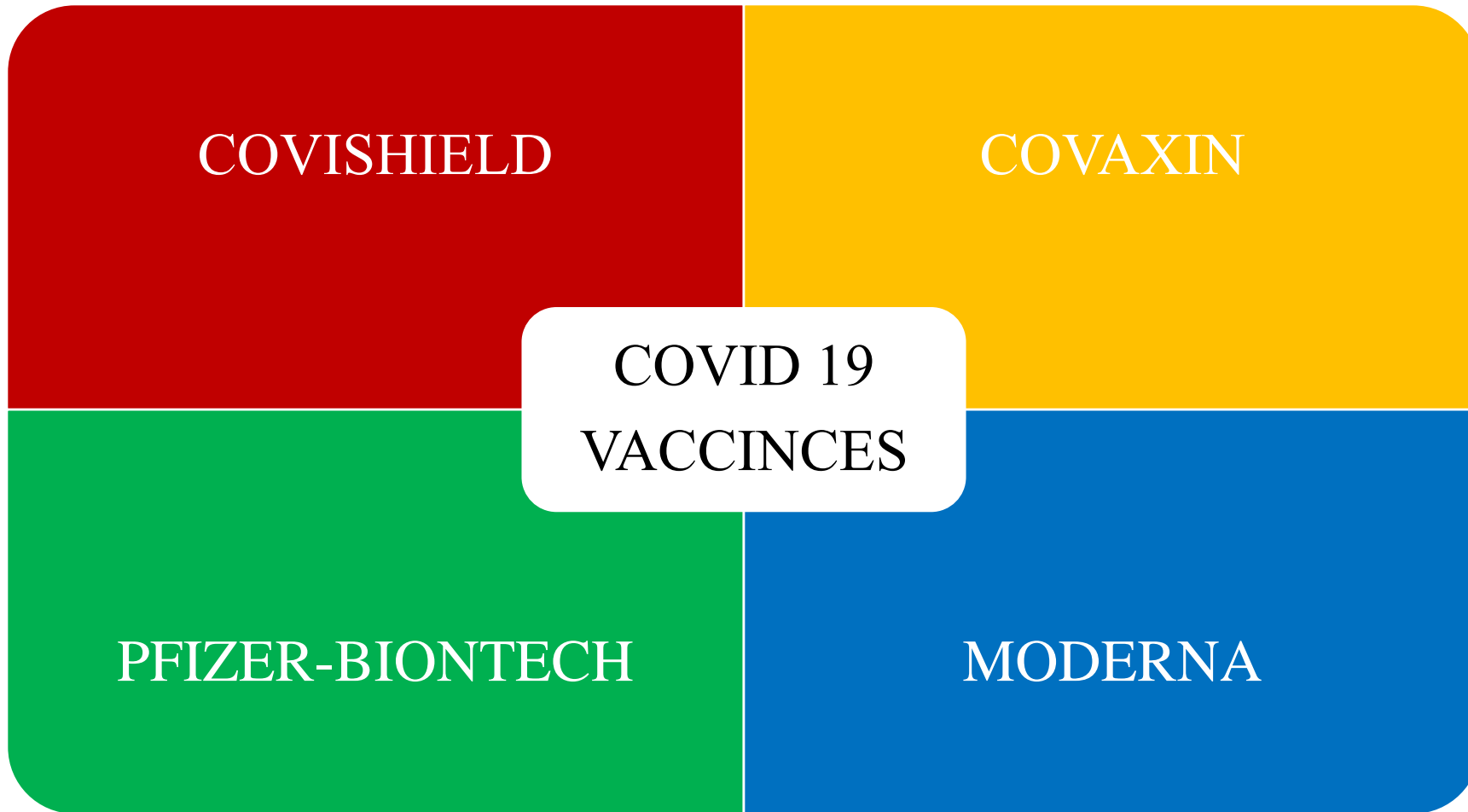
MODERATE

- Pneumonia with no signs of severe disease

SEVERE

- Respiratory distress requiring mechanical ventilation
- Non invasive & invasive

VACCINES



COVISHIELD

- Covishield vaccines recombined chimpanzee adenovirus vector vaccine
- Intramuscular vaccine
- Given two dose, 28 days apart
- The protective level of antibodies are generally developed two weeks after the second dose of the vaccine.
- The vaccine has been approved for individual 18 years of age and above
- to be stored 2 – 8 degree Celsius

SIDE EFFECTS

- Injection site pain and tenderness
- Headache
- Fatigue
- Myalgia
- Discomfort
- Pyrexia
- Chills and nausea

COVAXIN

- The Bharat Biotech vaccine, Developed by India with the collaboration of ICMR and NIV Pune
- Intramuscular vaccine
- Two dose vaccine given by 28 days apart
- To person above 18 years of age
- Vaccine should be stored 2 – 8 degree of Celsius

SIDE EFFECTS

- Injection site pain
- Fatigue
- Fever
- Headache
- Body ache
- Nausea
- Abdominal pain
- Dizziness
- Sweating
- Cold and cough

PFIZER-BIONTECH

- it is a Messenger RNA vaccine with 95% efficacy
- people 16 years and older are eligible for the vaccine
- Intramuscularly vaccine administrate in two dose 3 weeks apart
- It is authorized for emergency use
- It is not inter changeable
- Storage is at – 70 degree Celsius

SIDE EFFECTS

- Injection site pain
- Tiredness
- Head ache
- Muscle pain
- Chills
- Joint pain
- Fever
- Injection site swelling and redness
- Nausea
- Feeling unwell
- Swollen lymph nodes
- Remote chances to allergic reactions

Moderna vaccine

- it is a Messenger RNA vaccine with 94.1% efficacy
- Meant for people 18 years of age and above
- Two doses given intramuscularly 1 month apart
- It should be stored between – 25 to – 15 degree Celsius

SIDE EFFECTS

- Injection site pain
- Redness
- Swelling
- Tenderness
- Fatigue
- Head ache
- Muscle pain
- Joint pain
- Vomiting and fever
- Severe side effect of breathing, bad rashes on whole over the body, shortage of breathing, faster heart beat, dizziness and weakness

TREATMENT AND PROTOCOL

- Place the patient in a well ventilated single room
- Limit the number of care takers
- Household members should stay in a different room
- Limit the movement of the patient and minimized shared space
- The care givers must use medical mask and PPE kit
- Perform hand hygiene often
- Practice respiratory hygiene and exercise
- Discard the materials used by the patient properly
- Avoid direct contact with patient
- Clean and disinfect the room and surroundings where the patient stayed
- Use pulse oximeter and monitor oxygen saturation

DEAD BODY MANAGEMENT

- The workers who are attending the funeral of Covid 19 death must practice hand hygiene, ensure proper use of PPE kit
- Place the body in a leak proof plastic bag
- The exterior of the body bag decontaminated with 1 per cent hypochlorite
- The body bag can be wrapped with mortuary sheet or sheet provided by the family members
- Embalming of the body should not allowed
- Autopsies should be avoided
- The crematorium/ burial ground staff should be sensitized that Covid does not pose additional risk to them
- Bathing, kissing and hugging of the dead body is not allowed
- Large gathering of funeral should be avoid
- The funeral staff should take prevention and practice hand and personal hygiene after the cremation/burial

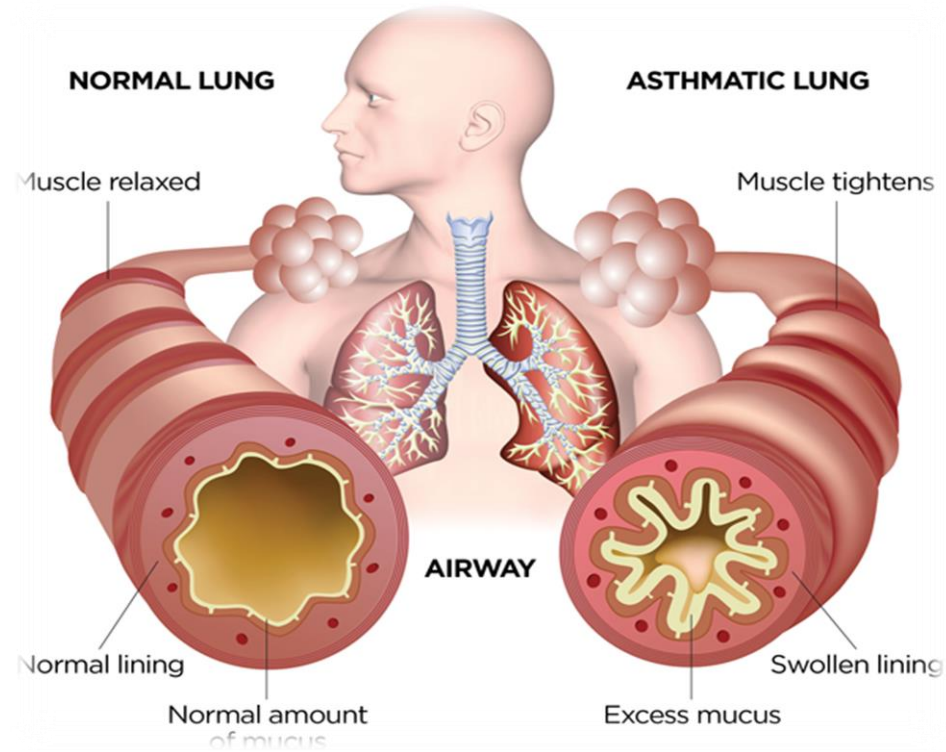
ASTHMA

- Asthma is a chronic disease that causes the airways of the lungs to swell and narrow. It leads to breathing difficulty, such as wheezing, shortness of breath, chest tightness and coughing. So asthma also called bronchial asthma , is a disease that affects lungs.
- **ASTHMA ATTACK:**
- When you breath normally, muscles around your airways are relaxed, letting air move easily and quietly. During an asthma attack , three things can happen.

Muscle tightness

Swollen lining

Excess mucus



Causes :

Allergic

Non- allergic

Allergic :

Some people allergirs can cause an asthma attack. Allergens include things like molds, pollens and pet dander.

Non-allergic:

Adult – onset:

This type of asthma starts after the age of 18

Pediatric:

Also called childhood asthma . This type of asthma often begins before the age of 5 and can occur in infants and toddlers.

Children may outgrow asthma.

Environment factors

Genetics

Respiratory infection

Common asthma attack triggers:

Air pollution

Dust mite

Exercise

Mold

Pests

Pet

Tobacco smoke

Strong chemical or smells

Certain occupational exposures

Pregnancy

Obesity

Stress

Hormonal factors

CARDIAC DISORDERS

CARDIOVASCULAR DISEASE

- Heart diseases are different diseases affecting the heart
- Heart is a muscle made up of four chambers
- Some factors causing heart diseases are:
- Gender
- Age
- Obesity
- High Cholesterol
- High Blood Pressure
- Diabetes

CARDIOVASCULAR DISEASE

- Cardiovascular comprise of a group disease of the heart and the vascular system
- The major conditions are ischaemic heart disease
- Hypertension
- Cerebrovascular disease(stroke)
- Congenital heart disease
- Rheumatic heart disease

Congenital Heart Disease

- Anatomic malformation of the heart or great vessels which occurs during intrauterine development, irrespective of the age at presentation
- Congenital heart disease occurs in approximately 0.8% of live births
- The incidence is higher in stillborns (3-4%)
- Spontaneous abortuses (10- 25%)

Causes of Congenital Heart Defects

- Environmental factors
- Viral infections
- rubella during the first three months of pregnancy
- Medication
- Lithium (used to manage bipolar disorder)
- Alcohol
- Smoking
- Cocaine
- Genetic factors (siblings)

Classification

- Acyanotic
 1. Increased pulmonary blood flow
- Cyanotic
 1. Decreased pulmonary blood flow

Estimated deaths and crude death rate by cause and sex (2016)

Disease	Men		Women		Total	
	Number	CDR	Number	CDR	Number	CDR
CVD	15,04,400	219.2	10,85,700	170.2	2,59,100	195.6
RHD	41,800	6.1	55,300	8.7	97,100	7.3
Hypertension	54,100	7.9	60,500	9.5	1,14,600	8.7
IHD	10,00,800	145.8	6,07,800	95.3	16,08,700	121.5
Stroke	3,72,000	54.2	3,34,200	52.4	7,06,200	53.3

RISK FACTORS

- Alcohol consumption
- Physical activity
- Salt intake
- BP
- Obesity
- Inappropriate Nutrition
- Tobacco consumption
- Cholesterol level

Prevention

- Primary prevention

Population-wide intervention

- Comprehensive tobacco control policies
- Taxation to reduce the intake of foods that are high in fat, sugar and salt
- Building walking and cycle paths to increase physical activity
- Strategies to reduce harmful use of alcohol
- Providing healthy school meals to children

Individual level Interventions

- At the individual level, for prevention of first heart attacks and strokes
- Individual health care interventions need to be targeted to those at high total cardiovascular risk

Secondary Prevention

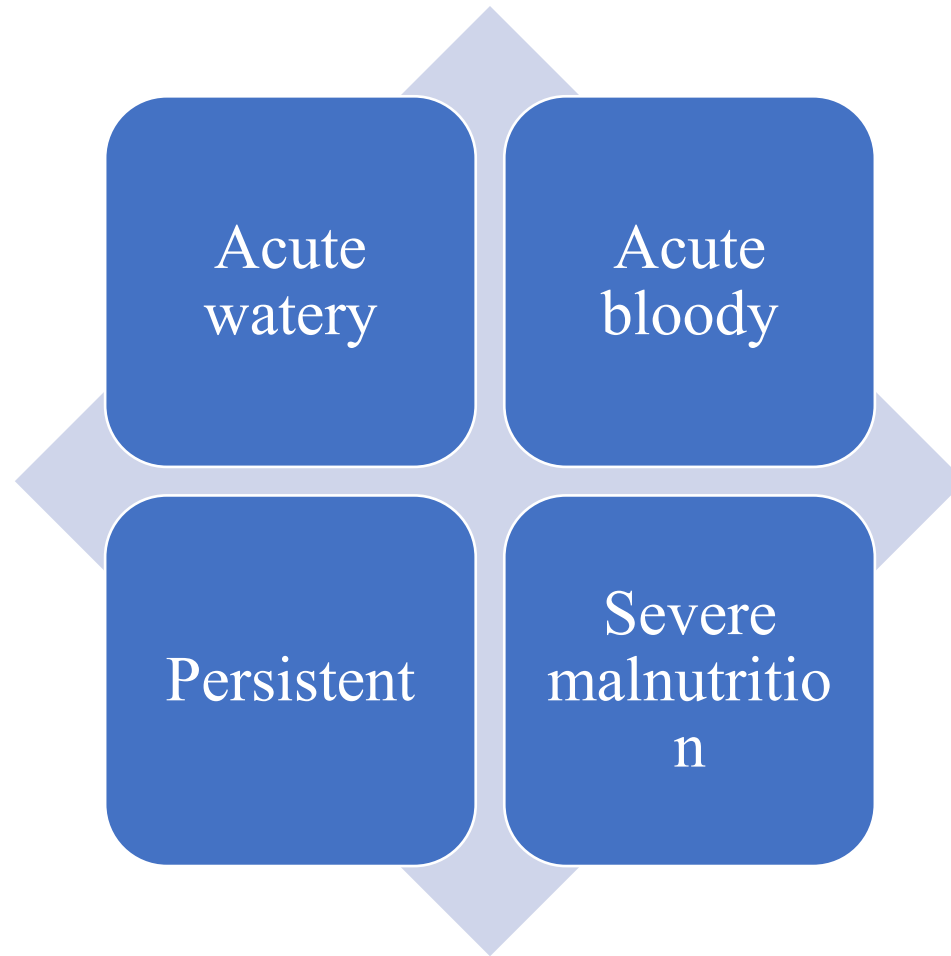
- Aspirin
- Beta-blockers
- Angiotensin- converting enzyme inhibitors
- Statins
- In addition costly surgical operations are sometimes required to treat CVDs ,
- Coronary artery bypass
- Balloon angioplasty(a small balloon like device is threaded through an artery to open the blockage)
- Valve repair and replacement
- Heart transplantation

ACUTE DIARRHOEAL DISEASES

DIARRHOEA

- Diarrhoea is defined as the passage of loose liquid or watery stools
- These liquid stools are usually passed more than three times a day.
- It is recent change in consistency and character of stools rather than the number of stools that is more important.
- The term diarrhoeal diseases should be considered only as a convenient expression
- Not as a nosological or epidemiological entity
- For a group of diseases in which the predominant symptom is diarrhoea
- Most common in children

CLINICAL TYPES OF DIARRHOEA



SYMPTOMS AND COMPLICATION

Acute watery

- It lasts several hours or days, Dehydration, Weight loss
- Might leads to cholerae or coli bacteria

Acute bloody

- Damage of intestinal mucosa, sepsis and malnutrition, dehydration, visible blood in stool
- Major cause is shigella bacteria

Persistent Diarrhoea

- Which lasts 14 days or longer, malnutrition and non intestinal infection, dehydration
- Person with STD/AIDS are more likely to develop

Severe malnutrition Diarrhoea

- Severe systemic infection, dehydration, vitamin and mineral deficiency
- Major problem is heart failure

AGENTS (VIRUSES)

- Rotaviruses
- Astroviruses
- Calciviruses
- Coronaviruses
- Norwalk group viruses
- Enteroviruses
- cytomegaloviruses

BACTERIA

- Campylobacter
- Enterotoxigenic
- Shigella
- Vibrio cholerae
- Vibrio parahaemolyticus
- Bacillus cereus
- Staphylococcus
- Clostridium
- Enterohaemorrhagic

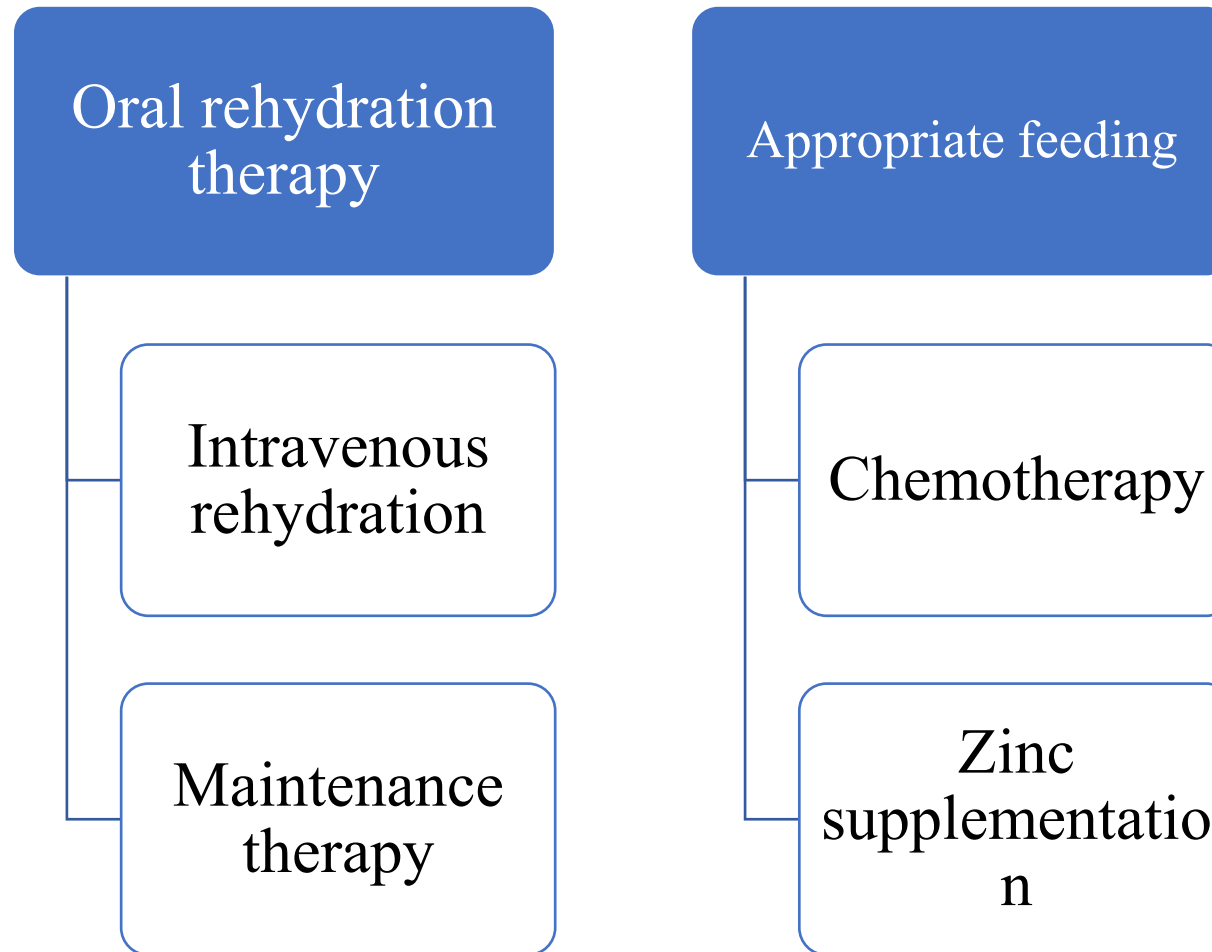
PREVENTION OF DIARRHOEA

- Improved drinking water source
- Improved sanitation facilities
- Immunization against measles
- Vitamin A supplementation
- Usage of ORS packet
- Supplementation of ORT
- Recommended home made fluids
- Increases fluids
- Encouraged to drink plenty of water

CONTROL OF DIARRHOEAL DISEASE

- The diarrhoeal disease programme first introduced by WHO in 1980
- Advocated several intervention plans and strategies to prevent the disease
- Major components of controlling the prevalence of diarrhoeal diseases are
 - **Appropriate clinical management**
 - **Better MCH care practices**
 - **Adopting of preventive strategies**
 - **Prevention of diarrhoeal epidemic**

APPROPRIATE CLINICAL MANAGEMENT



ORAL REHYDRATION THERAPY

- Safe and successful treatment to prevent and treat acute diarrhoea
- It reduce the dehydration and mortality
- Sodium bicarbonate and glucose is the component includes the ORS

INTRAVENOUS REHYDRATION

- Given to initial level of rehydration of severely dehydrated patients who are shock or unable to drink
- It is the combination of sodium and potassium

MAINTENANCE THERAPY

- After the initial fluid and electrolyte deficit oral fluid should be used for maintenance therapy
- It should be given for mild and severe diarrhoea

MAINTENANCE THERAPY

APPROPRIATE FEEDING

- This is for the children who are facing severe diarrhoea
- Breast feeding is continued along with oral rehydration solution

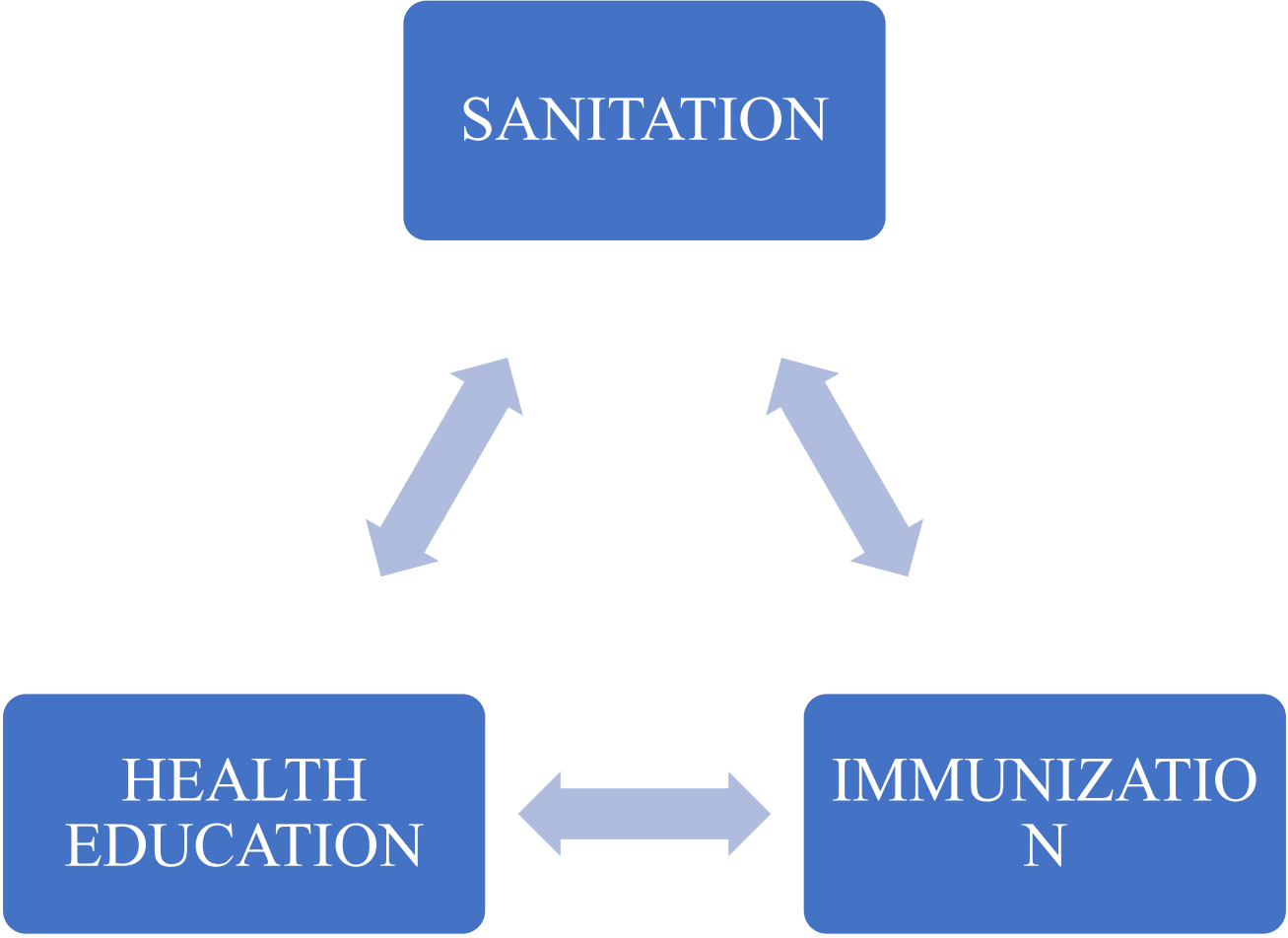
CHEMOTHERAPY

- Prescription of antibodies and other drugs for using treating diarrhoea
- It must be use when the diagnosis of shigella, cholera or any other vaccine along with diarrhoea

ZINC SUPPLEMENTATION

- Given during the period of acute diarrhoea
- It reduce the episode and duration of severity

PREVENTIVE STRATEGIES

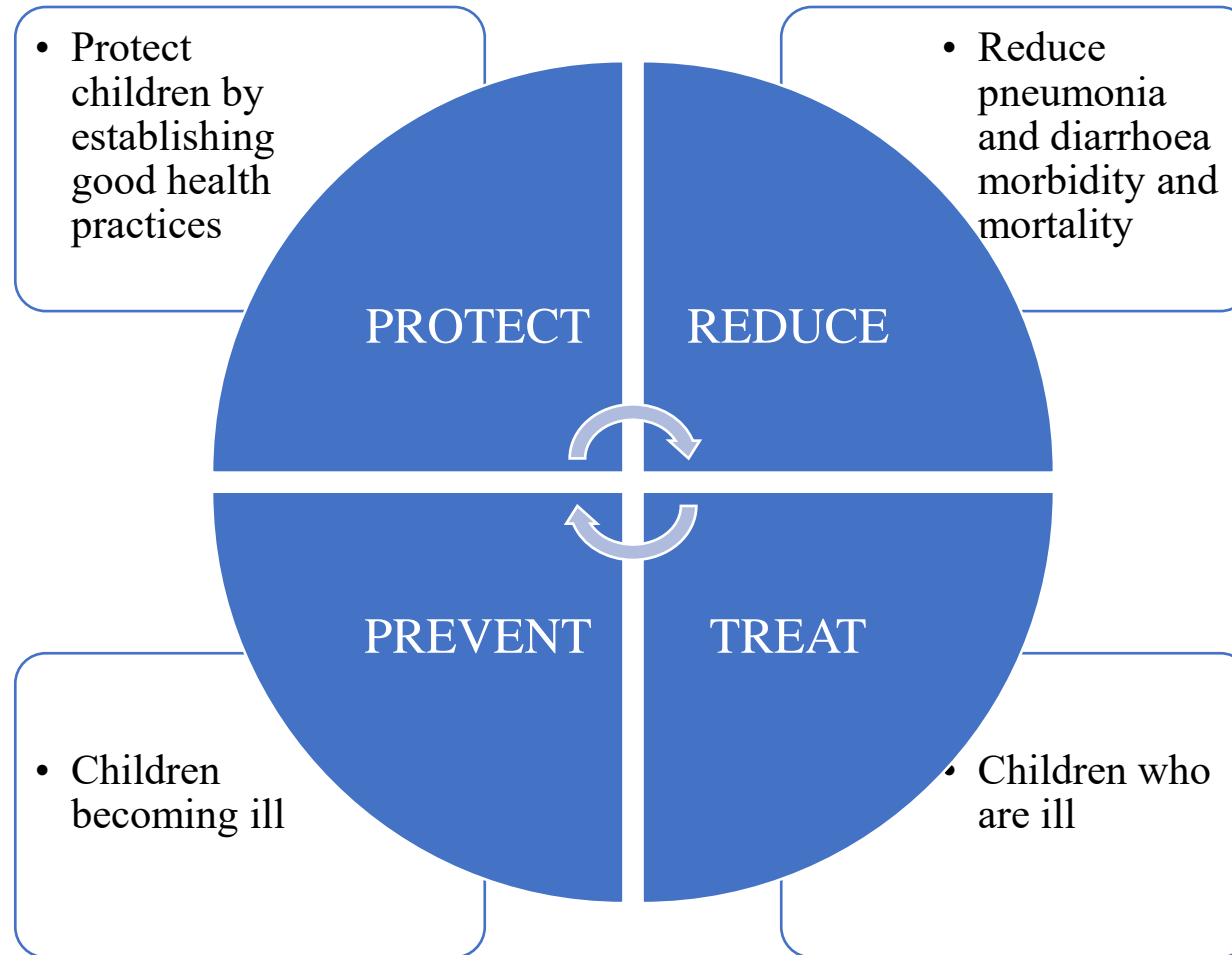


VACCINE

ROTAVIRUS VACCINE

- Available vaccine for preventing diarrhoea
- Licensed in 2006
- Oral vaccine given by two dose
- Administered to schedule the infants of approximately 2 and 4 months of age
- The interval between the two dose of vaccine should be 4 weeks
- The two dose should be complete by age 16 weeks
- No later than by 24 weeks of age

ADOPTED KEY STRATEGY



DIARRHOEAL DISEASE CONTROL PROGRAMME IN INDIA

- Programme was started in India in 1978
- Main objective is to reduce mortality and morbidity
- Strengthening case management system
- Improving maternal knowledge and community awareness
- Use of ORS and home available fluids
- Continued feeding
- Inception of National Oral Rehydration Therapy

How Cancers Develop and Spread

- Cancer develops only in cells with damaged genes (mutations).
 - Mutations can be inherited or caused by exposure to:
 - Low-dose radiation
 - Drugs
 - Toxic chemicals
 - Infection with certain viruses can cause mutations.
 - Lifestyle plays a major role in cancer prevention.

What is cancer

- Cancer is a disease in which some of the body's cells grow uncontrollably and spread to other parts of the body.
- Cancer can start almost anywhere in the human body, which is made up of trillions of cells. Normally, human cells grow and multiply (through a process called [cell](#) division) to form new cells as the body needs them. When cells grow old or become damaged, they die, and new cells take their place.

- of errors that occur as cells divide.
- of damage to DNA caused by harmful substances in the environment, such as the chemicals in tobacco smoke and ultraviolet rays from the sun. (Our Cancer Causes and Prevention section has more information.)
- they were inherited from our parents.

How Cancers Develop and Spread (continued)

- Cells that begin to grow abnormally but are not yet cancer cells, may form **benign tumors**.
 - Benign tumors are surrounded by a fibrous capsule, and they do not spread or invade surrounding tissues.
 - Benign tumors are usually not life-threatening unless they interfere with vital processes.

Cancer Detection and Staging

- Cancer **screening** is an examination to detect cancer before a person has symptoms.
- American Cancer Society recommends screening for early detection, particularly for high-risk people or people with symptoms.
 - Visual examination
 - Self-examination
 - Clinical (physician) examination
 - Laboratory testing
 - Scans (MRI, CAT)

Lung Cancer

- Tobacco smoking is the leading cause of various cancers.
- 30% of cancer deaths, including 87% of lung cancer deaths, are attributed to tobacco use.
- Lung cancer is the leading cause of cancer deaths in the United States.
- Smoking cigarettes is most common cause.
- Women are more susceptible to lung cancer than men due to presence of the GRPR gene, which is linked to the abnormal growth of lung cells and is more active in women.

Lung Cancer (continued)

- **Signs and symptoms**
 - In the early stages, signs and symptoms may be difficult to detect.
 - Cigarette smokers may have chronic cough or chronic bronchitis
 - **Risk factors and prevention**
- **Risk increases with:**
 - The number of cigarettes smoked/day
 - The number of years a person smokes
 - How deeply the smoker inhales
 - Smoking high-tar or unfiltered cigarettes

Lung Cancer (continued)

- Quitting tobacco use reduces lung cancer risk, but it never returns to that of a nonsmoker.
- Passive smoking may increase nonsmokers' risk of lung cancer.
 - Environmental tobacco smoke is associated with 20% to 30% increase in lung cancer risk.
- Asbestos and radon exposure also increase risk.

Cancers Related to Diet

About one-third of cancer deaths in the United States that occur annually are due to nutrition and physical activity factors.

For people who do not use tobacco, diet, and physical activity are the most important modifiable determinants of cancer risk.

Ex. Colorectal (3rd most deadly cancer in U.S.)

Breast Cancer

- Breast cancer occurs primarily in women.
- Signs and symptoms involve changes in breast tissue:
 - **Risk factors**
- **Family history**
 - Women with mothers, sisters, or daughters who have breast cancer
- **Age**
 - Rare before age 20
 - Risk increases throughout the 20s
 - Rises dramatically during the 30s through mid-70s (majority of cases occur in women 40 and over)
 - Drops significantly after mid-70s

Cervical Cancer

- A causal association exists between infection with human papillomavirus (HPV) and cervical cancer.
 - Causes genital warts
 - Is sexually transmitted
 - Risk of infection increases with an increased number of sexual partners and/or non-monogamous partners
 - Women who became sexually active before age 17 have higher risk

Cervical Cancer (continued)

- Long-term use of oral contraceptives is associated with an increased risk of cervical cancer.
- In 2006, the Food and Drug Administration (FDA) approved a vaccine to prevent cervical cancer.
 - The vaccine, Gardasil, prevents infection with four types of HPV.
- The American Cancer Society (ACS) recommends that all women should have annual Pap tests three years after their first vaginal intercourse but not later than age 21.

Cancers Related to Ultraviolet Radiation

- Related to exposure to ultraviolet (UV) radiation from the sun as well as tanning beds.
- Three types of UV radiation: UVA, UVB, and UVC. All types are harmful and have potential to cause skin cancer.
- UVA is associated with sunburn, skin cancer formation, and premature aging effects.

Skin Cancer

- Related to exposure to ultraviolet (UV) radiation from the sun as well as tanning beds.
- Three types of UV radiation: UVA, UVB, and UVC.
- All types are harmful and have potential to cause skin cancer.
- UVA is associated with sunburn, skin cancer formation, and premature aging effects.

Skin Cancer (continued)

- Artificial UV sources may also generate UVC rays
 - UVC is potent cancer-causing radiation
 - Earth's atmosphere filters natural UVC
- Prevention
 - Limit sun exposure
 - Use sunscreens
 - Wear protective clothing when exposed to sunlight
 - Avoid artificial sources of UV light (i.e., tanning beds).

Types of Skin Cancer (continued)

- If you are high risk for malignant melanoma, check skin regularly for *skin lesions* that:
 - Are asymmetrical (A)
 - Have irregular borders (B)
 - Have multiple colors (C)
 - Have a diameter greater than pencil eraser (D)
- Prevention
 - Limit sun exposure
 - Use sunscreens
 - Wear protective clothing when exposed to sunlight
 - Avoid artificial sources of UV light (i.e., tanning beds)

Reducing Cancer Risk

- Eat a diet low in fat and red meats, especially high-fat and processed meats.
- Eat a variety of fruits and vegetables daily.
- Follow ACS's recommendations for cancer screening tests.
- Men should conduct monthly testicular self-examinations.
- Know warning signs of cancer and see your health care provider immediately if you detect any.

Reducing Cancer Risk (continued)

- Sexually active people should use condoms to avoid contacting HPV.
- Maintain a healthy weight.
- Women should consult with their health care providers about risks of using oral contraceptives or hormone replacement therapy.
- Exercise most days of the week.
- When in the sun, takes steps to limit UV radiation exposure.

Reducing Cancer Risk (continued)

- Don't smoke or chew tobacco.
- Avoid secondhand smoke.
- Don't drink excessive amounts of alcohol.
- Avoid unnecessary exposure to ionizing radiation, such as x-rays and UV light.
- Don't lie in the sun or tanning beds.
- Avoid direct sun exposure between 10 a.m. and 4 p.m.
- Avoid exposure to toxic chemicals and fumes.
- Avoid asbestos dust and radon gas.
- Avoid eating cured or smoked meats.

CANCER

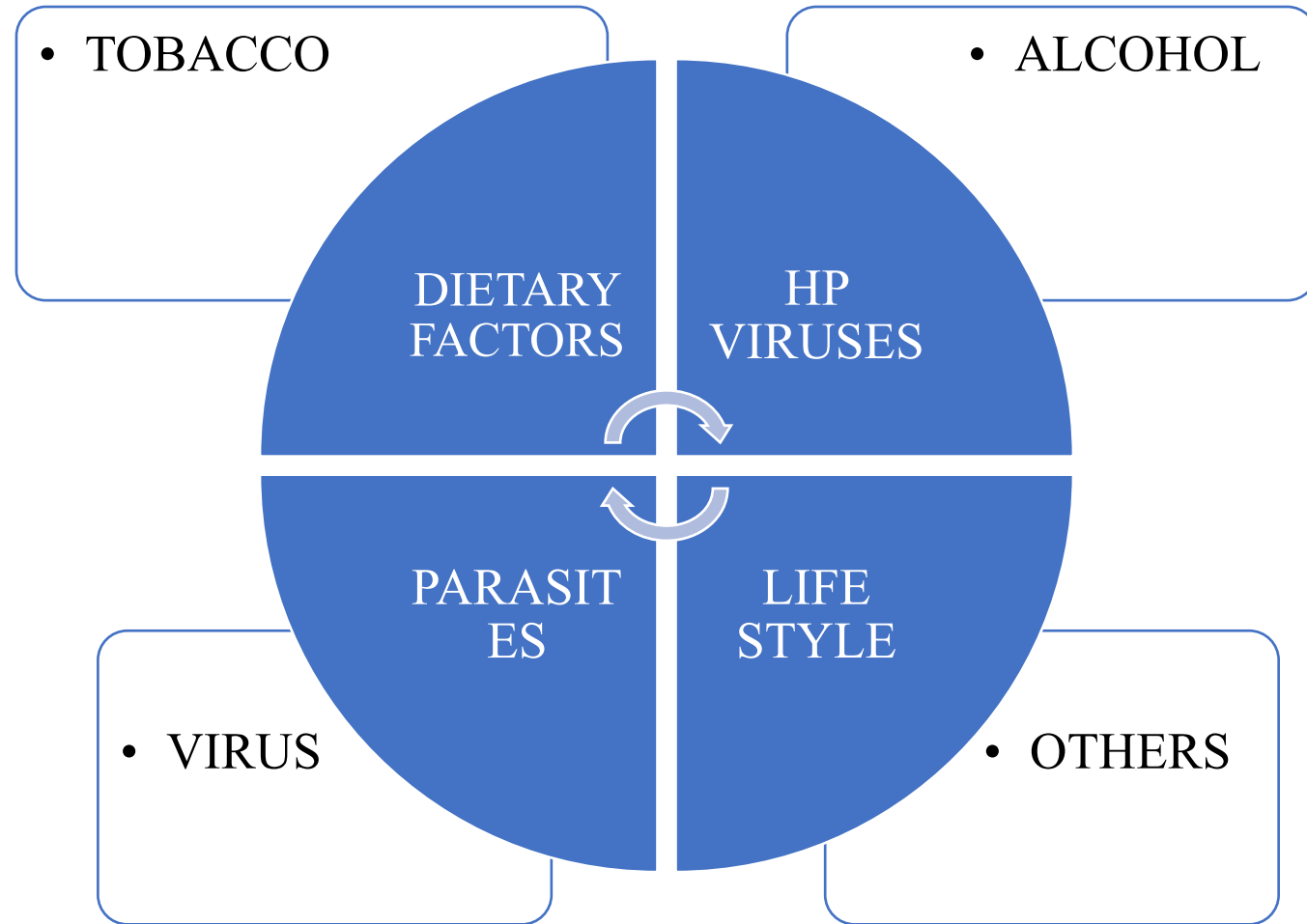
WHAT

- Cancer is a disease in which some of the body's cells grow uncontrollably and spread to other parts of the body.
- Cancer is regarded as a group of diseases characterized by an abnormal growth of cell, ability to invade adjacent tissues, eventual death (health)
- Cancer can occur even any site or tissue of the body
- Consequent progress of the tumor beyond the cells

How Does Cancer Develop

- Cancer is a genetic disease—that is, it is caused by changes to genes that control the way our cells function, especially how they grow and divide.
- Genetic changes that cause cancer can happen because:
 - of errors that occur as cells divide.
 - of damage to DNA caused by harmful substances in the environment, such as the chemicals in tobacco smoke and ultraviolet rays from the sun. (Our Cancer Causes and Prevention section has more information.)
 - they were inherited from our parents.
- The body normally eliminates cells with damaged DNA before they turn cancerous. But the body's ability to do so goes down as we age. This is part of the reason why there is a higher risk of cancer later in life.

CAUSES ENVIRONMENTAL FACTORS





TOBACCO

- Various form of usage.
- Lungs, mouth, pancreas and kidney



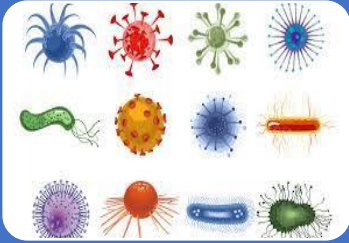
ALCOHOL

- Excessive intake of beverages
- Beer consumption associated with rectal cancer



DIETARY FACTORS

- Food additives and oily fat food
- Beef, grilled, smoked fish



VIRUS

- Hepatitis B and C
- Intensive supportive factor



HPV

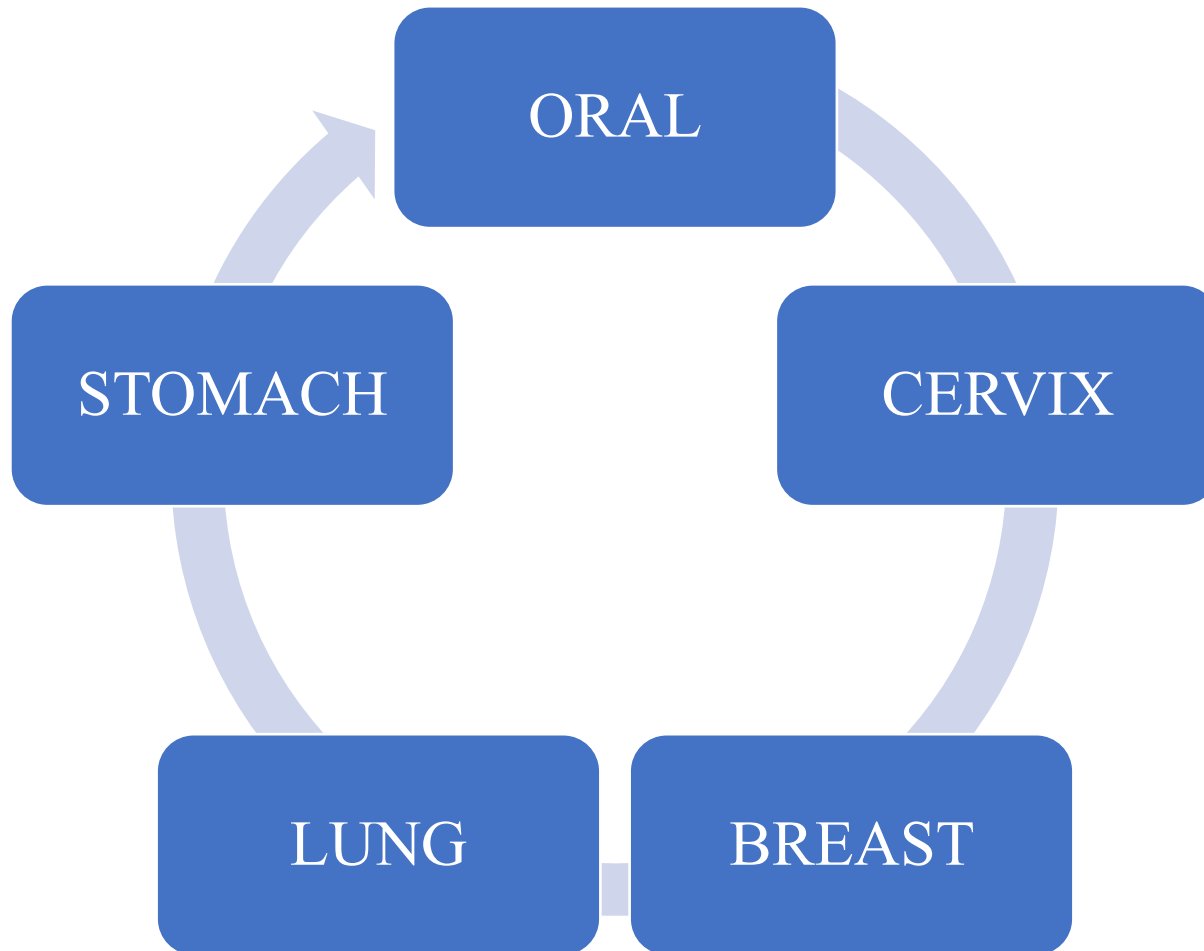
- Chief suspect Cervix cancer
- US/ JAPAN



LIFE STYLE

- Food life style, Tobacco and Alcohol

TYPES



ORAL

- Common type of cancer
- In 2020 about 2lakh men and 1lakh women were having oral cancer
- 1.8% of cancer death
- Use of tobacco, smoking, alcohol, panparag/ hans are the major reason
- Major threat for central Asian countries
- Elimination of consuming tobacco product in the community is the primary prevention

CERVIX

- Fourth most frequent cancer
- Every year 3.4 lakh women died
- 90% of death occurred in the low economic country
- 9.4% of cancer incidence in India
- HPV is the causative agent
- Once the virus entered into the body it will pass through lymph nodes and pelvic organs

BREAST CANCER

- Leading cause of global cancer incidence
- 2.3 million new cases estimated in last years
- In India it is the top most cancer
- 13.3% of death per 100000 population
- Age, family history, parity, age at menarche and menopause, diet, socio-economic status etc are the factors associated for breast cancer

LUNG CANCER

- 19th century diseases, first found in men and second followed by women in an industrial settings
- 1960 to 1980 the death rate of lung cancer increased by 76 % in men and 135% in women
- Cigarette smoking is the major reason
- 2.2 million new lung cancer patients and 1.8 million deaths were reported last year
- Leading cause of morbidity and mortality among men
- Age and sex, smoking this are the prime factor

STOMACH CANCER

- Important type of cancer reporting globally
- 1.8 million cases were reported last year
- 7.7 % of all cancer deaths
- Rate are 2 fold higher in men than women
- Symptoms are may be non specific
- Cancer is treated by removal of tumor with or with out the chemotherapy

PREVENTION OF CANCER

primary prevention

- Control of tobacco and alcohol consumption
- Personal hygiene
- Radiation
- Occupational exposures
- Immunization
- Food, drugs and cosmetics
- Pollution
- Legislation
- Cancer education

PREVENTION OF CANCER

secondary prevention

- Hospital based registration
- Population based registration
- Early detection of cases
- Treatment
- Screening
- Medical camps

TYPES OF GENES THAT CAUSE CANCER

Carcinoma

- formed by epithelial cells
- which are the cells that cover the inside and outside surfaces of the body

Sarcoma

- Sarcomas are cancers that form in bone and soft tissues, including muscle, fat, blood vessels, lymph vessels, and fibrous tissue

Leukemia

- Cancers that begin in the blood-forming tissue of the bone marrow

Multiple Myeloma

- Multiple myeloma is cancer that begins in plasma cells, another type of immune cell. The abnormal plasma cells, called myeloma cells, build up in the bone marrow and form tumors in bones all through the body.

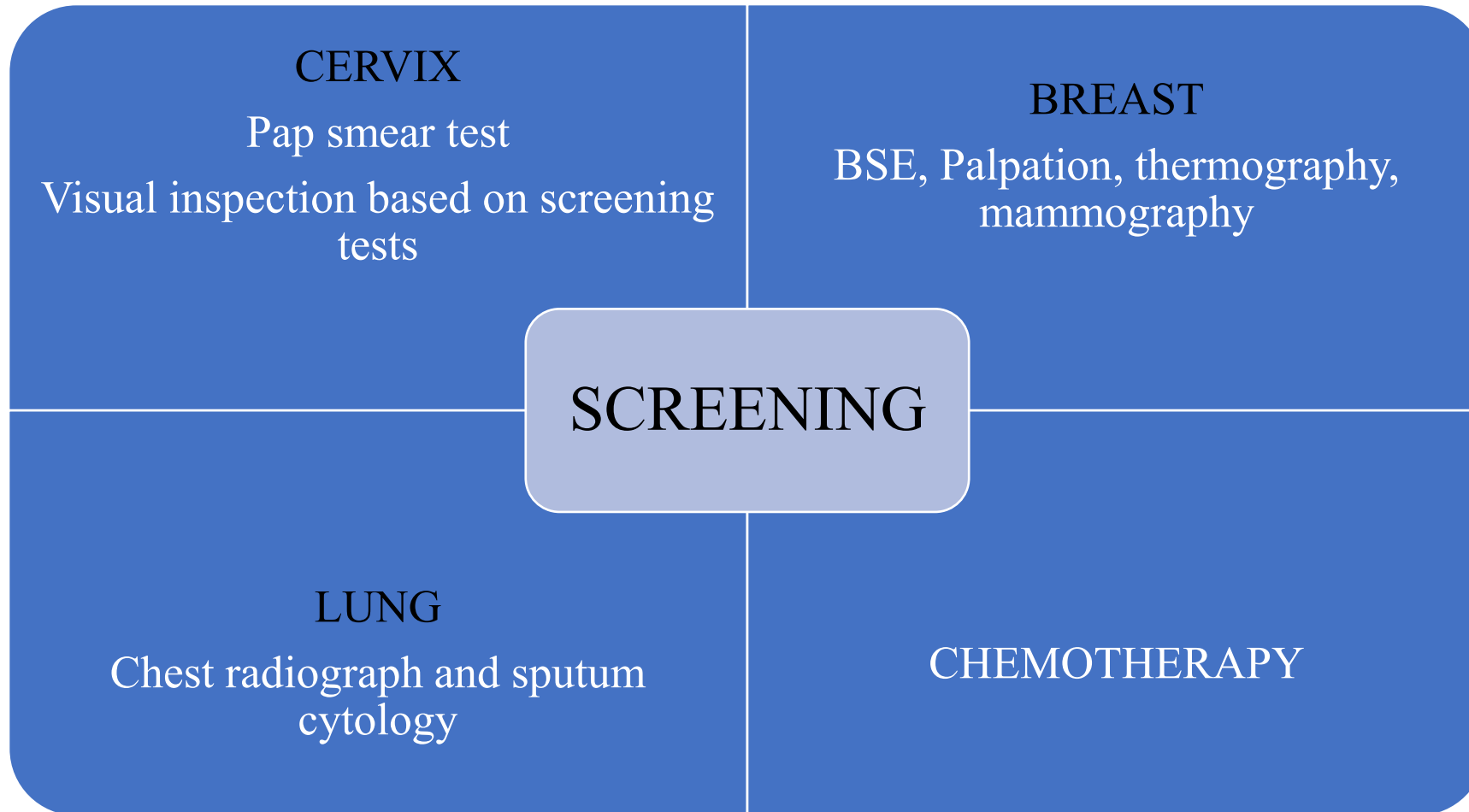
Melanoma

- Melanoma is cancer that begins in cells that become melanocytes, which are specialized cells that make melanin

Brain and Spinal Cord Tumors

- These tumors are named based on the type of cell in which they formed and where the tumor first formed in the central nervous system.

METHODS OF CANCER SCREENING



Definition

- **“Epilepsy is a recurrent seizure disorder characterized by abnormal electrical discharge from brain, often in the cerebral cortex.”**

Or

- **“Epilepsy is a chronic seizures disorder with recurrent & unprovoked seizures.”**



ANXIETY



WEAKNESS



STARING

Symptoms of Epilepsy



**MUSCLE
CONTRACTION/
JERKING**



**LOSS OF
CONSCIOUSNESS**



HEADACHES



Epilepsy Causes



brain damage



brain infections



genetics



use alcohol



Types of Seizures

GENERALISED SEIZURES



The entire brain is affected

The person is unconscious

Includes tonic-clonic, absence, atonic and myoclonic seizures

FOCAL SEIZURES



Begins in one part of the brain

The person may be fully aware or have impaired awareness

Includes focal aware and focal unaware seizures

Diagnosis of Epilepsy



physical
exam



neurological
exam



ECG



blood
tests

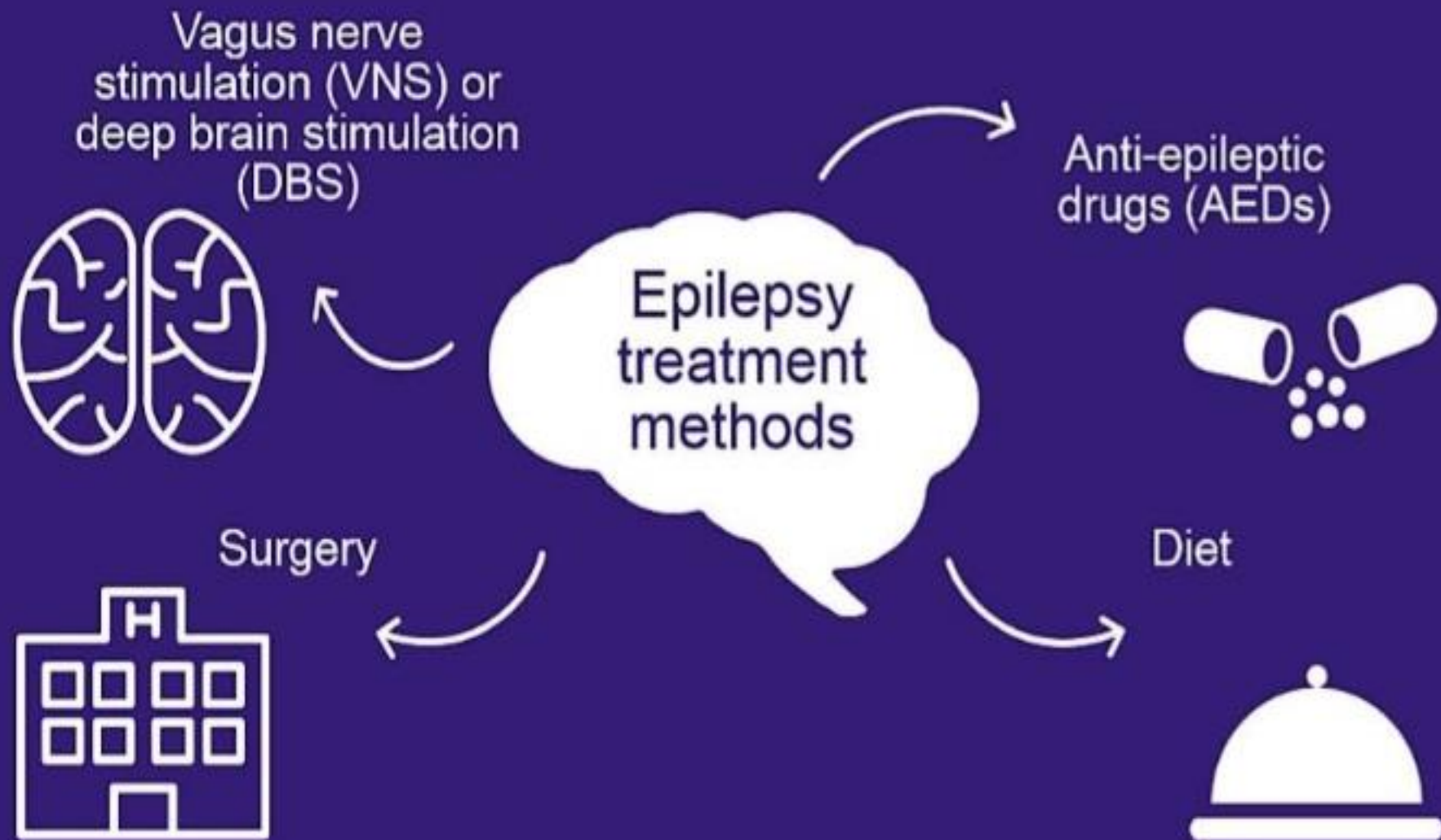


EEG



imaging
tests

Current treatments



EPILEPSY SEIZURES PREVENTION

NO STRESS



NO DRUGS



NO CIGARETTES



NO TV



NO ALCOHOL



NO VIDEO GAMES



NO BRIGHT LIGHT



NO FAST FOOD



COMMUNICABLE DISEASES

CHICKENPOX

CHICKENPOX

- Acute – highly infectious disease caused by varicella – zoster
- The causative agent of chickenpox V-Z virus is called Human (alpha) herpes virus 3
- The virus occurs in the oropharyngeal secretions and lesions of skin and mucosa
- The period of communicability of patients with chickenpox is estimated to range from 1 to 2 days of illness
- The virus tends to die out before the pustular range

CHARACTERISTICS OF CHICKENPOX

- Deep seated
- Vesicles multilocular and umbilicated
- Only one stage of rash may be seen at one time
- No area of inflammation is seen around the vesicles
- Superficial
- Evolution of rash very rapid
- Scabs begin to form 4 – 7 days after the rash appears
- Temperature rises with each fresh crop of rash

CLINICAL FEATURES

- The clinical course of chicken pox may be divided into two stages such as

1. PRE – ERUPTIVE STAG

2. ERUPTIVE STAGE

- In the majority of the cases the disease tends to be mild and typical
- In apparent infection is estimated to occur in no more than 5 per cent of susceptible children

PRE – ERUPTIVE STAGE

- Onset is sudden with mild or moderate fever, pain in the back, shivering and malaise
- The stage is very brief and short, lasting about 24 hours
- In adults the prodromal illness is usually more severe and may last for 2 – 3 days before rash comes out

ERUPTIVE STAGE (Features)

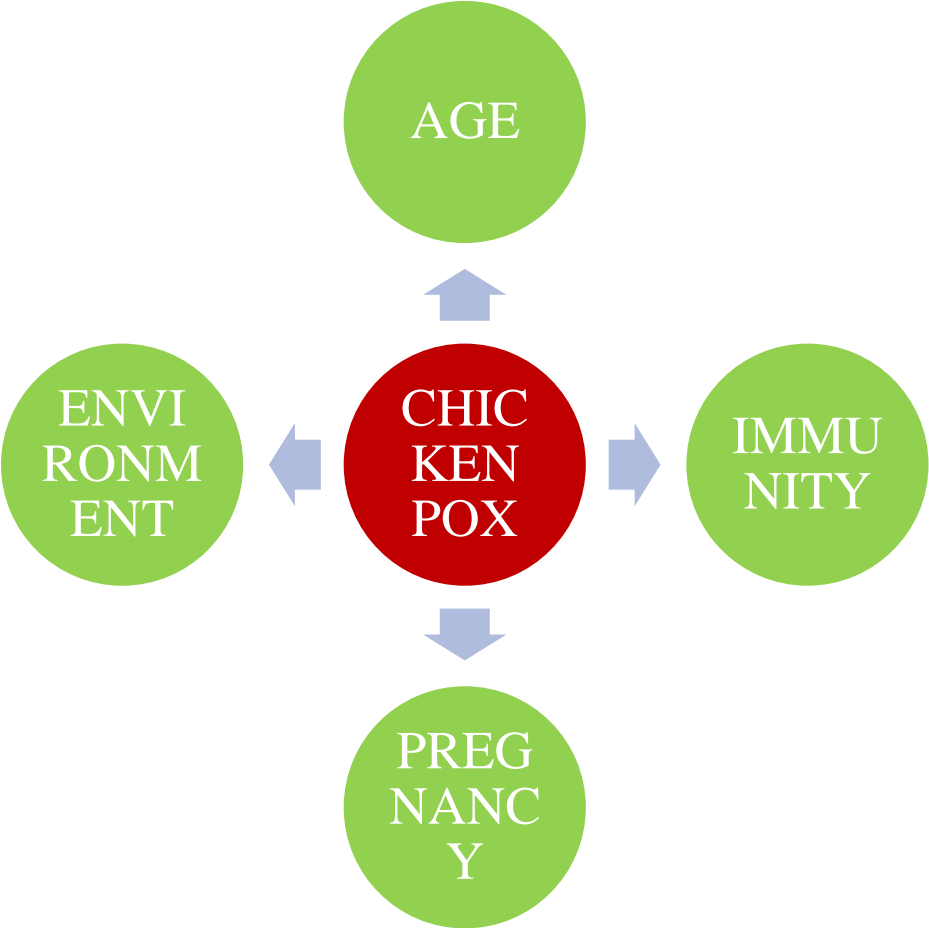
- The rash is often the first sign, it comes on the day the fever starts. The distinctive features of the rash are

DISTRIBUTION : The rash is symmetrical. It first appears on the trunk where it is abundant and then comes on the face, arms and legs

RAPID EVOLUTION : The rash advances quickly through the stages of macule, papule, vesicle and scab. Scabbing begins 4 to 7 days after the rash appears.

PLEOMORPHISM : A characteristic feature of the rash in chickenpox. This is due to the rash appearing in successive crops for 4 to 5 days in the same area

HOST FACTORS



AGE

- Chickenpox occurs primarily among children under 10 years of age
- Few person escape infection until adulthood
- The disease can be severe in normal adults

IMMUNITY

- One attack give durable immunity, second attacks are rare
- The acquisition of maternal antibody protects the infant during the first few months of life
- The cell mediated immunity appear to be important in recovery from V – Z virus

PREGNANCY

- Infection during pregnancy leading to congenital varicella syndrome
- Infants whose mother had chickenpox during pregnancy have a higher risk of developing heprpes zoster in the first year of life

ENVIRONMENTAL FACTORS

- It shows seasonal trend in temperature settings and most in tropical settings
- Peak incidence during winter and spring or in coolest
- Periodic large outbreak occurs with an inter- epidemic cycle of 2 – 5 years
- VZV is heat labile, virus survive in the external environment only for few hours.
- It is readily inactivated by lipid solvents, detergents and proteases
- 14 to 16 days, although extremes as wide as 10 to 21 days have been reported as the incubation period.

TRANSMISSION

- Chickenpox is transmitted from person to person by droplet infection and by droplet nuclei
- Most people are infected by face to face personal contact
- The portal of virus entry is the upper respiratory tract or the conjunctiva
- Contact infection undoubtedly plays a role when an individual with herpes zoster is an index case
- The virus can cross the placental barrier and infect the foetus, a condition known as congenital varicella

PREVENTION AND TREATMENT

VARICELLA – ZOSTER IMMUNOGLOBULIN (VZIG)

- VZIG is given within 72 hours of exposure has been recommended for prevention of chickenpox in exposed susceptible individual particularly in immunosuppressive therapy
- VZIG is given by intramuscular injection in a dose of 12.5 unit/kg body weight upto a maximum of 625 unit with a repeat dose in 3 weeks.

VACCINE

- A live attenuated varicella virus vaccine is safe and currently recommended for children between 12 – 18 months of age who have not had chickenpox
- Monovalent vaccine can be administered following one or two dose schedule (0.5 Milli each by subcutaneous injection)
- a two dose schedule is recommended for all person aged above 13 years
- When two doses are administered the minimum interval between dose is from 4 weeks to 3 months
- For children 12 months to 12 years old age inclusive and 4 or 6 weeks for adolescence and adults.

- Combination vaccines can be administered to children from 9 months to 12 years
- If two dose of MMRV are used the minimum interval between those should be 4 weeks.
- It is preferred that the second dose be administered 6 weeks to 3 month after the first dose or at 4 to 6 years of age.
- The duration of immunity is not known but is probably 10 years.
- Varicella vaccination is contraindicated during pregnancy and pregnancy should be delayed for 4 weeks after vaccination

POST EXPOSURE PROPHYLAXIS

- It is recommended for post exposure administration to un vaccinated and healthy people aged greater than 12 months and without other evidence of immunity to prevent or modified the disease
- The vaccine should be administered as soon as possible with in 5 days after exposure to rash
- Among children protective efficiency was reported as 90% vaccination of within 3 days of exposure
- Second dose is recommended for exposed people to bring them up to date on the vaccination and for best protection against the future exposure.

ACUTE RESPIRATORY INFECTION

- Acute respiratory infections may cause inflammation of the respiratory tract anywhere from nose to alveoli, with a wide range of combination of symptoms and Signs
- ARI is often classified by clinical syndromes, depending on the site of infection and is referred to as ARI of upper or lower respiratory tract
- The upper respiratory tract infection include common cold otitis media and pharyngitis
- The lower respiratory track infection include epiglottitis, laryngitis, laryngotracheitis, bronchitis, broncholotis and pneumonia
- In India ARI is one of the important cause of high infant and child mortality rate.

CLINICAL FEATURES

- Running nose
- Cough
- Sore throat
- Difficult in breathing
- Ear problem
- Fever
- Pneumonia

AGENTS

BACTERIA

Bordetella Pertusis
Corynebacterium
diphtheriae
Haemophilus influenza

Klebsiella pneumoniae
Legionella pneumophila
Staphylococcus
psyogenes

VIRUS

Adenoviruses
Enteroviruses
Measles
Parainfluenza

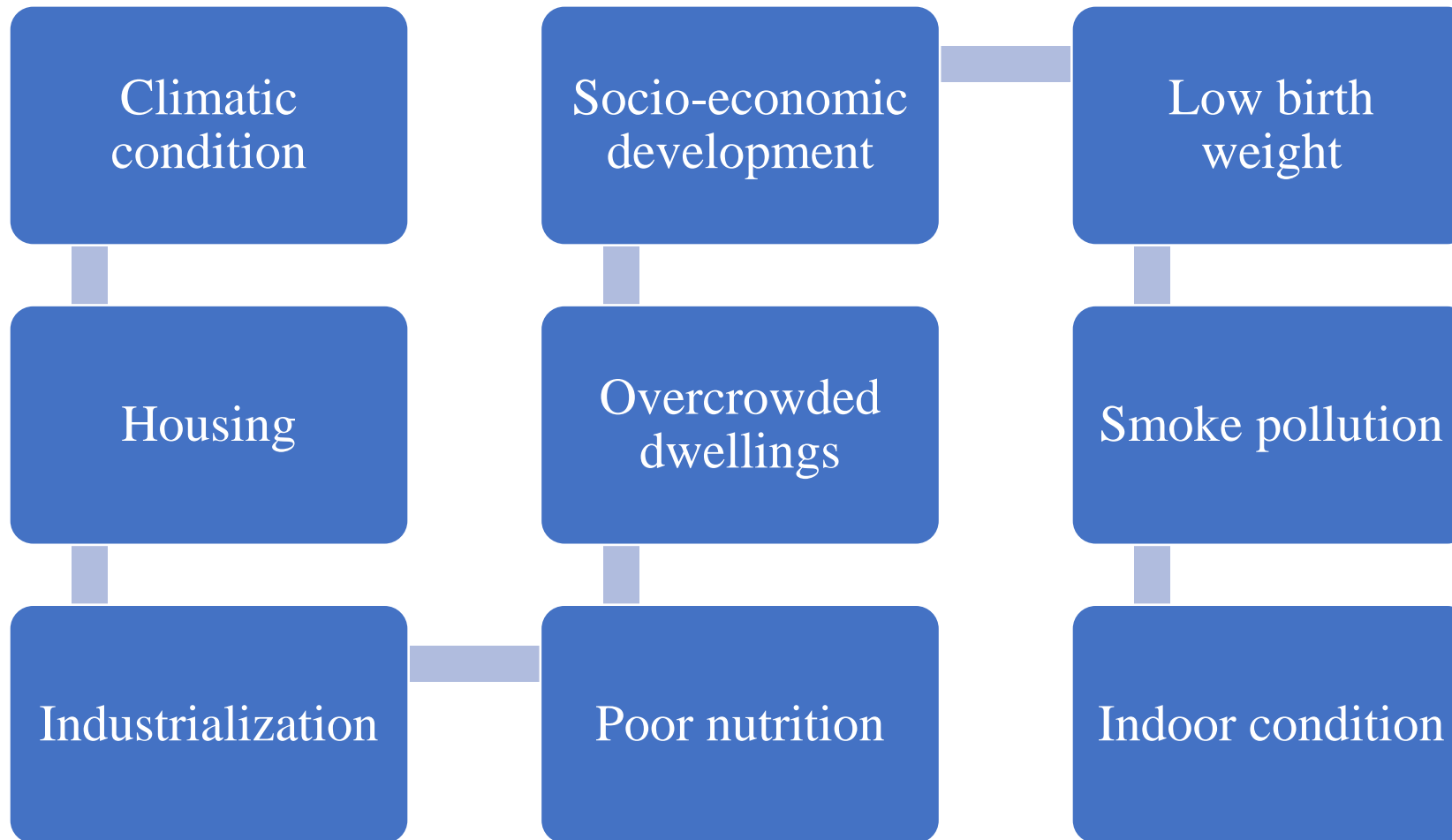
Respiratory syncytial
virus
Rhinoviruses
Corona viruses

OTHERS

Chlamydia type B
Coxiella burnetti

Mycoplasma
pneumoniae

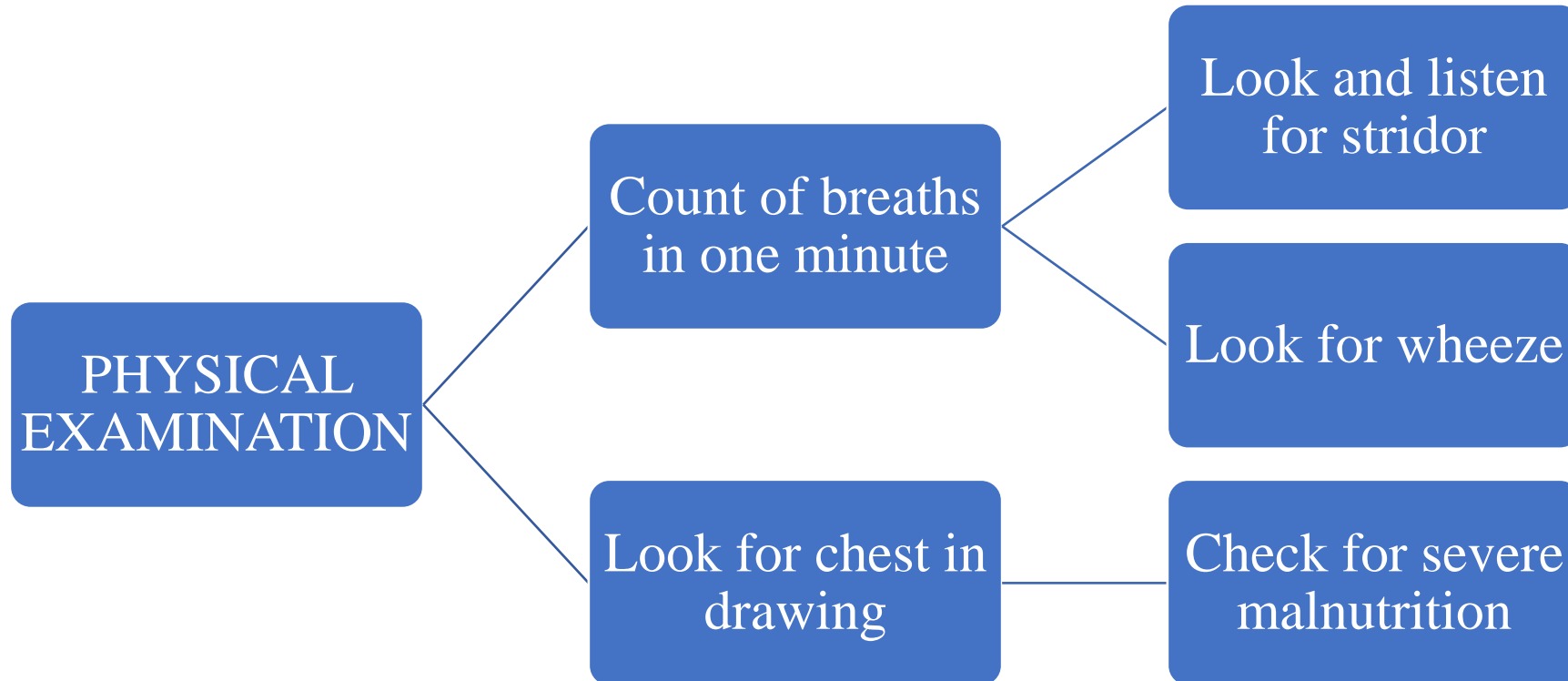
RISK FACTORS



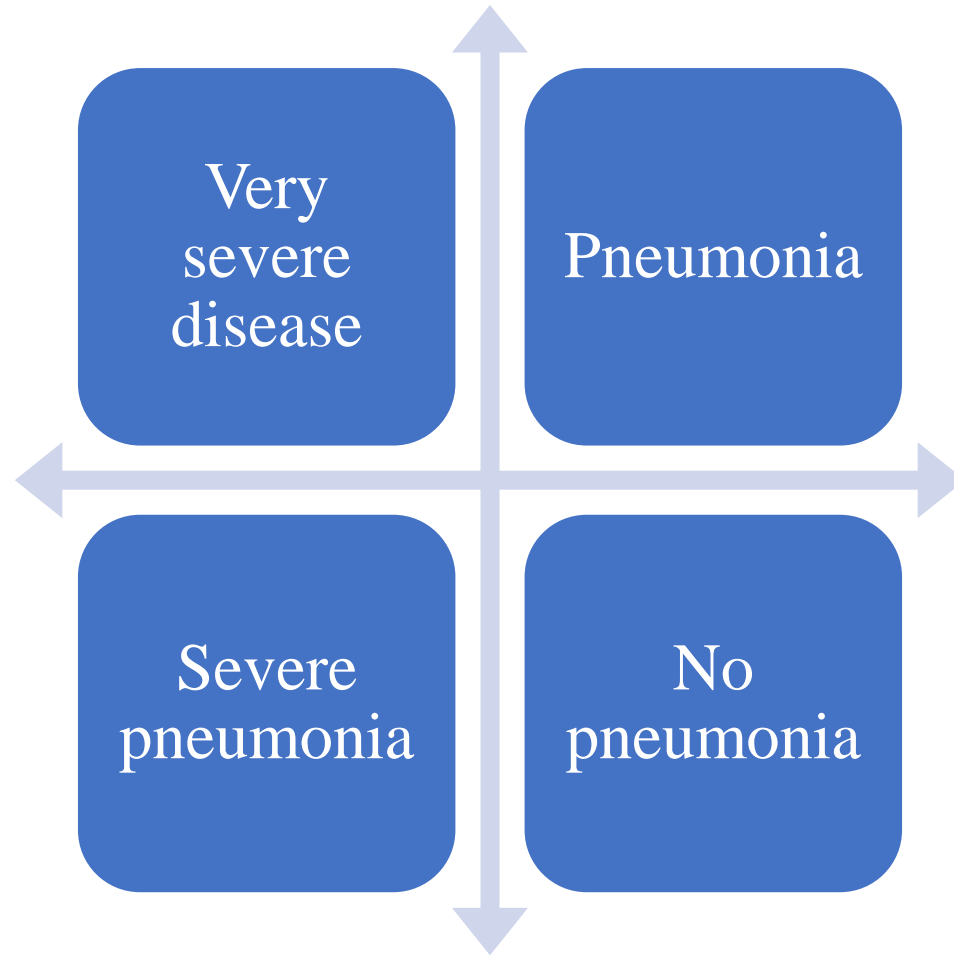
CONTROL

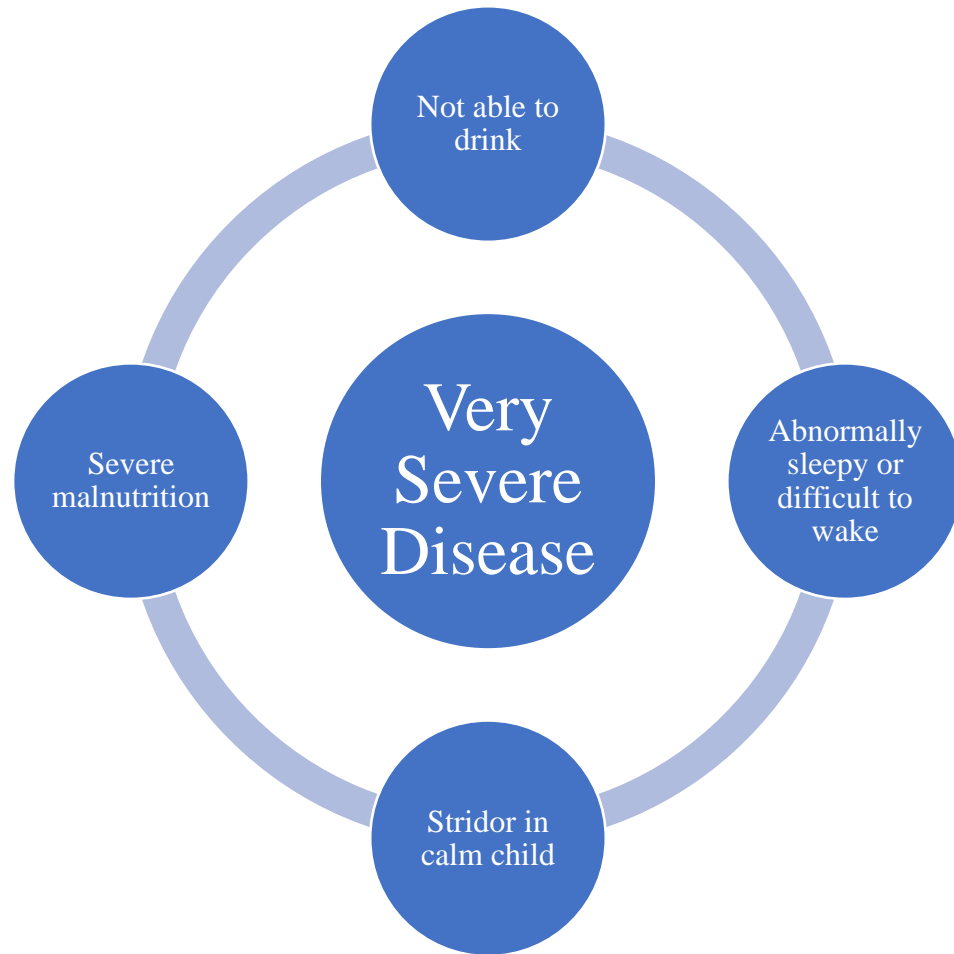
- Improving the primary medical care service and developing better method for early detection treatment and where possible prevention of ARI
- Effective reduction of mortality due to pneumonia possible if children suffering and pneumonia treated correctly
- Education of mother during the time of pregnancy

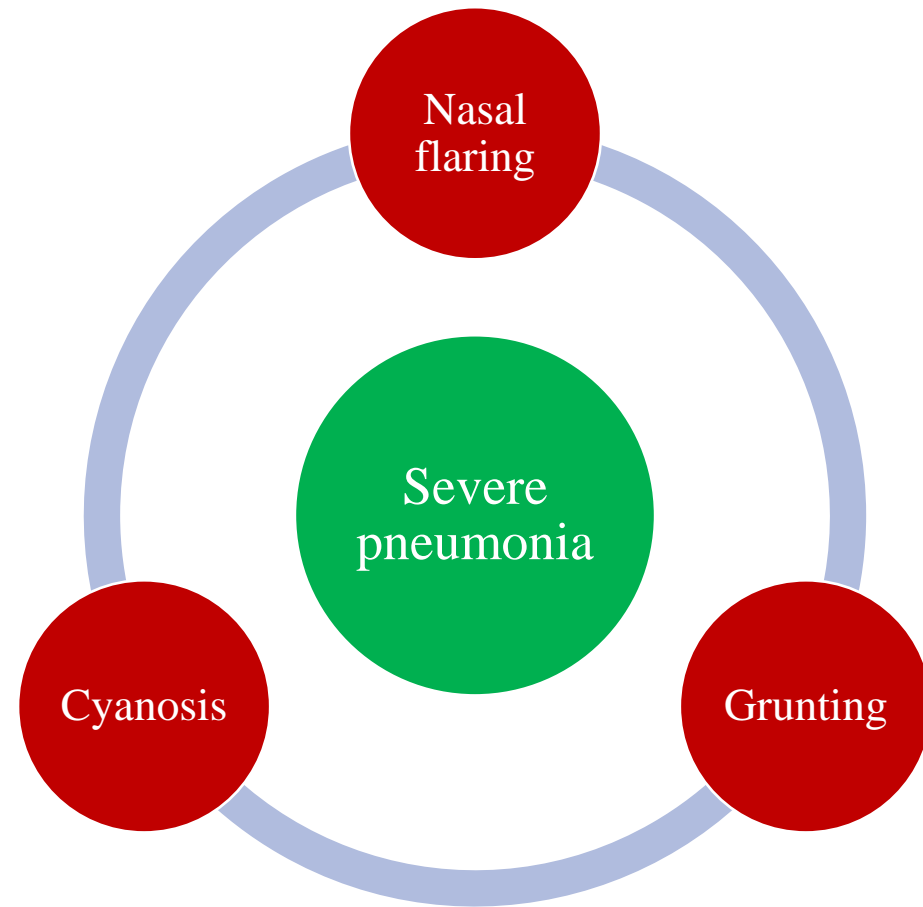
ASSESSMENT



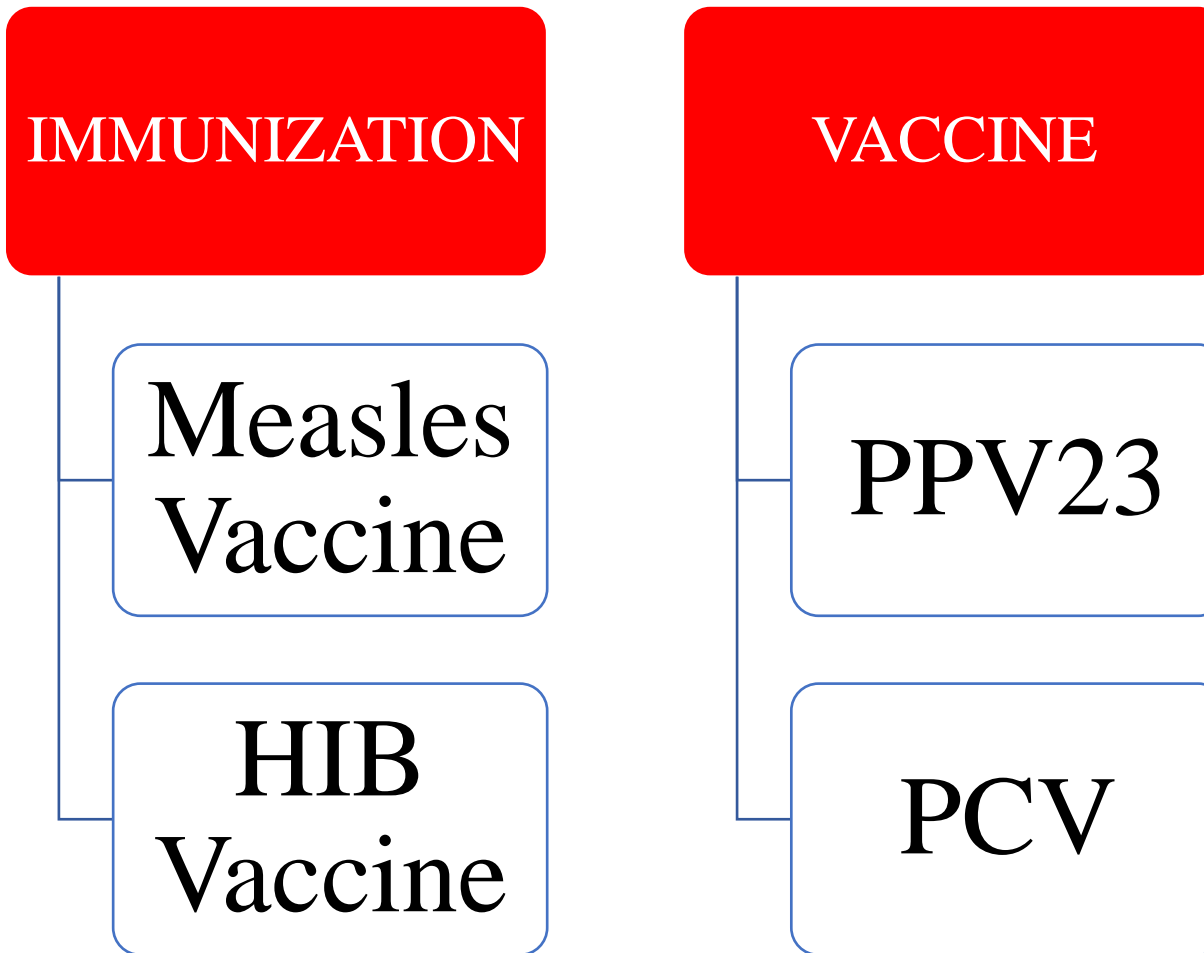
CLASSIFICATION OF ILLNESS







PREVENTION



VACCINES

POLYSACCHARIDE NON CONJUGATE VACCINE

- Single intra muscular injection
- A dose of 0.5ml

PNEUMOCOCCAL PNEUMONIA VACCINE

- Administration to infants
- 3 primary dose and 2 secondary dose vaccine

HYPERTENSION

Classification of blood pressure measurements

Category	Systolic(mm of Hg)	Diastolic
Optimal	<120	<80
Normal	120-129	80-84
High normal	130-139	85-89
Grade 1 Hypertension	140-159	90-99
Grade 2 Hypertension	160-179	100-109
Grade 3 Hypertension	>_180	>110
Isolated systolic hypertension	>_140	<90

Classification

- Hypertension is divided into primary and secondary
- Hypertension is classified as “essential” when the cause are generally unknown
- Essential hypertension is the most prevalent form of hypertension accounting for 90% of all cases of hypertension
- Hypertension is classified as “secondary” when some other disease process or abnormality is involved in its causation
- Prominent among these are diseases of kidney ,tumors of the adrenal glands, and toxemias of pregnancy
- These are estimated to account for about 10% or less the cases of hypertension

Risk Factors

- Non-modifiable risk factors
- AGE: Blood pressure rises with age in both sexes
- Age probably represents an accumulation of environmental influences and the effects of genetically programmed senescence in body systems
- Some populations have now been identified whose mean blood pressure does not rise with age
- These communities are for the most part primitive societies with calorie and often salt intakes at subsistence level

SEX

- Early in life there is little evidence of a difference in blood pressure between the sexes
- Adolescence, men display a higher average level
- Difference evident in young and middle aged adults
- late in life the difference narrows and the pattern may even be reversed
- Post menopausal changes in women may be the contributory factor for this change
- Studies are in progress to evaluate whether oestrogen supplementation protects against the late relative rise of blood pressure in women

GENETIC FACTORS

- Considerable evidence that blood pressure levels are determined in part by genetic factors and that inheritance is polygenic
- The evidence is based on twin and family studies
- Twin studies have confirmed the importance of genetic factors in hypertension
- The blood pressure values of monozygotic twins are usually contrast
- No significant correlation has been noted between husbands and wives, and between adopted children and their adoptive parents

ETHNICITY

- Population studies have consistently revealed higher blood pressure levels in black communities than other ethnic groups
- Average difference in blood pressure between the two groups vary from slightly less than 5 mm Hg
- The second decade of life to nearly 20mm Hg during the sixth
- Black Americans of African origin have been demonstrated to have higher blood pressure levels than whites

MODIFIABLE RISK FACTORS

- Obesity
- Salt Intake
- Saturated Fat
- Dietary Fiber
- Alcohol
- Heart Rate
- Physical Activity
- Environmental Stress
- Socio-economic status
- Other factors

PREVENTION

- Primary Prevention- Population Strategy
- The population strategy approach is directed at the whole population, irrespective of individual risk levels
- The concept of population approach is based on the fact that even a small reduction in the average blood pressure of a population would produce a large reduction in the incidence of cardiovascular complications such as stroke and CHD
- Goal- Shift the community distribution of blood pressure towards lower levels or biological normality
- This involves multifactorial approach ,based on the following non-pharmacotherapeutic intervention

POPULATION STRATEGY

- Nutrition
- Weight Reduction
- Exercise promotion
- Behavioural Changes
- Health Education
- Self-Care

HIGH-RISK STRATEGY

- To prevent the attainment of levels of blood pressure at which the institution of treatment would be considered
- This approach is appropriate if the risk factors occur with very low prevalence in the community
- Detection of high risk subjects should be encouraged by the optimum use of clinical methods
- Hypertension tends to cluster in families the family history of hypertension and “tracking” of blood pressure from childhood may be used to identify individuals at risk

SECONDARY PREVENTION

- Detect and control high blood pressure in affected individuals
- Modern anti-hypertensive drug therapy can effectively reduce high blood pressure and consequently the excess risk of morbidity and mortality from coronary
- Cerebrovascular and kidney disease

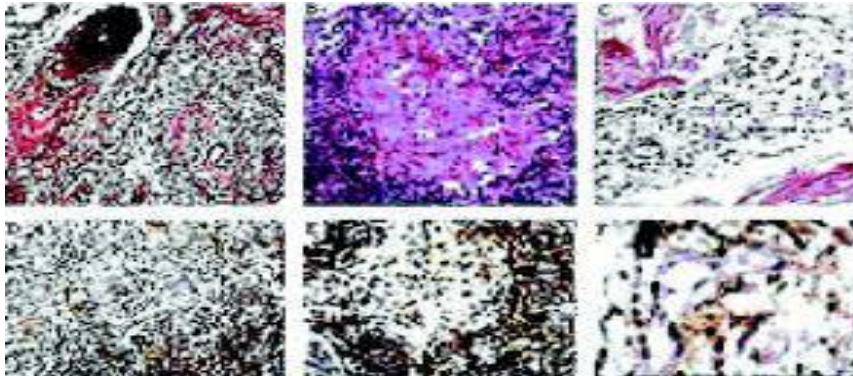
Continues...

- Early case detection
- Treatment
- Patient Compliance

LEPROSY



Mycobacterium leprae

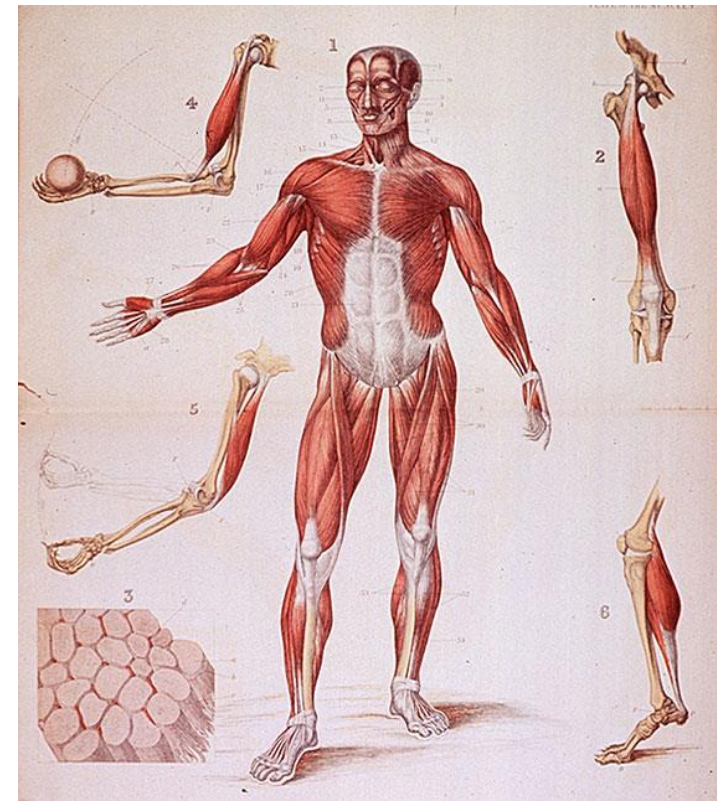
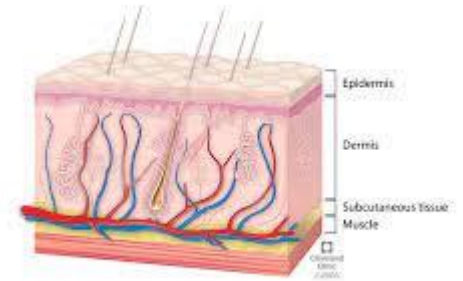
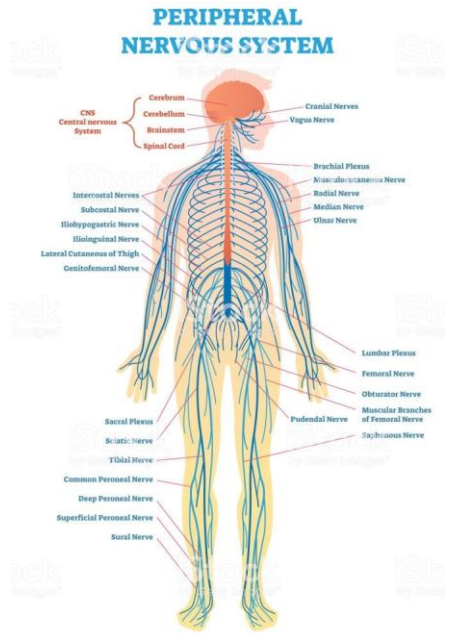


AGENTS



LEPROSY (HANSEN'S DISEASE)

- Chronic infectious disease caused by *M. Leprae*
- It affect peripheral nerve, skin, muscle, eyes, bones, testes and internal organs
- As per statistics shared by WHO, around 1,27,558 new leprosy cases were detected globally in 2020.
- In March 2021, 79 898 patients were under free MDT treatment for leprosy across the country. Despite COVID-19 disruption of health services during 2020-2021, 65 147 new cases of leprosy were identified, diagnosed and provided free treatment.
- Leprosy is endemic in several states and union territories of India, with the annual case detection rate of 4.56 per 10 000 population. The prevalence rate of leprosy is 0.4 per 10,000 population in the country.
- The disease manifest itself into two polar forms, namely lepromatous and tuberculoid leprosy



PROBLEM STATEMENT

- Over the past 20 years, more than 16 million leprosy patients have been cured
- Prevalence rate of the disease is 22.4 per million population by end of 2018
- New case of detection rate was 25.9 per million population in 2019
- Currently the emphasis is on 22 countries of global priority
- The number of relapse cases is 3897

- Leprosy mainly affects the skin, the peripheral nerves, mucosa of the upper respiratory tract, and the eyes. The disease is curable with multidrug therapy.
- Leprosy is likely transmitted via droplets, from the nose and mouth, during close and frequent contact with untreated cases. Untreated, leprosy can cause progressive and permanent damage to the skin, nerves, limbs, and eyes.
- There were 127558 new leprosy cases detected globally in 2020, according to official figures from 139 countries from the 6 WHO Regions. This includes 8 629 children below 15 years. The new case detection rate among child population was recorded at 4.4 per million child population.

EPIDEMIOLOGICAL DETERMINANTS

AGENT

- M. LEPRAE

SOURCE OF INFECTION

- Multibacillary cases are the most important source of infection in community
- Natural infection- monkey, chimpanzee

PORTAL OF EXIT

- Nose is the major portal of exit
- Discharged through sneeze or blow the nose

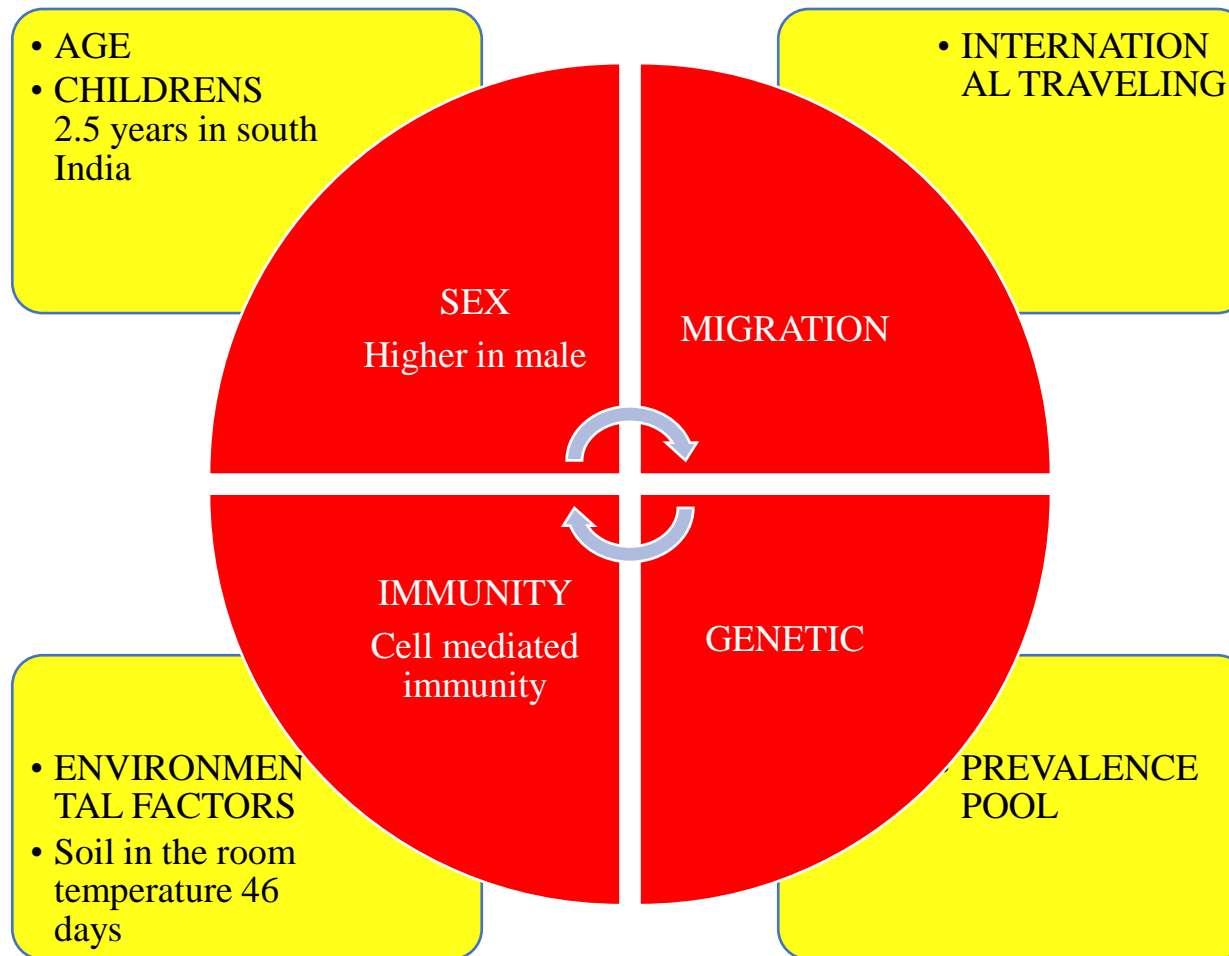
INFECTIVITY

- Highly infectious disease. Patient can be rendered dapsone for about 90 day

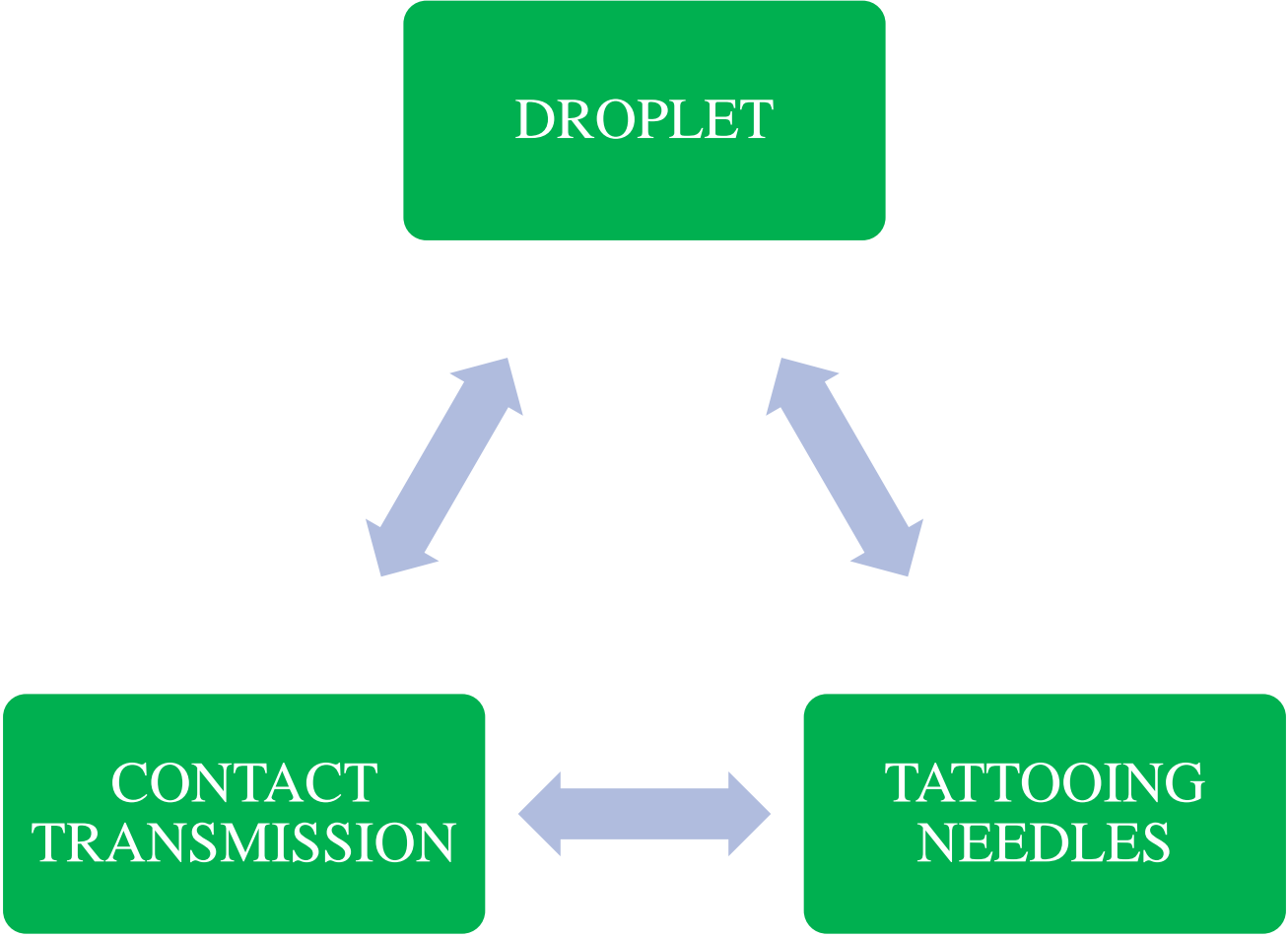
ATTACK RATES

- Among household contacts of lepromatous cases, varying proportion 4.4 percent to 12 percent

HOST FACTORS



MODE OF TRANSMISSION



INCUBATION PERIOD

- Has long incubation period an average of 3 to 5 years or more.
- Symptoms can take as long as 20 years to appear
- Knowledge of incubation period of leprosy is also essential
- Some leprologists prefer latent period in incubation

CLASSIFICATION

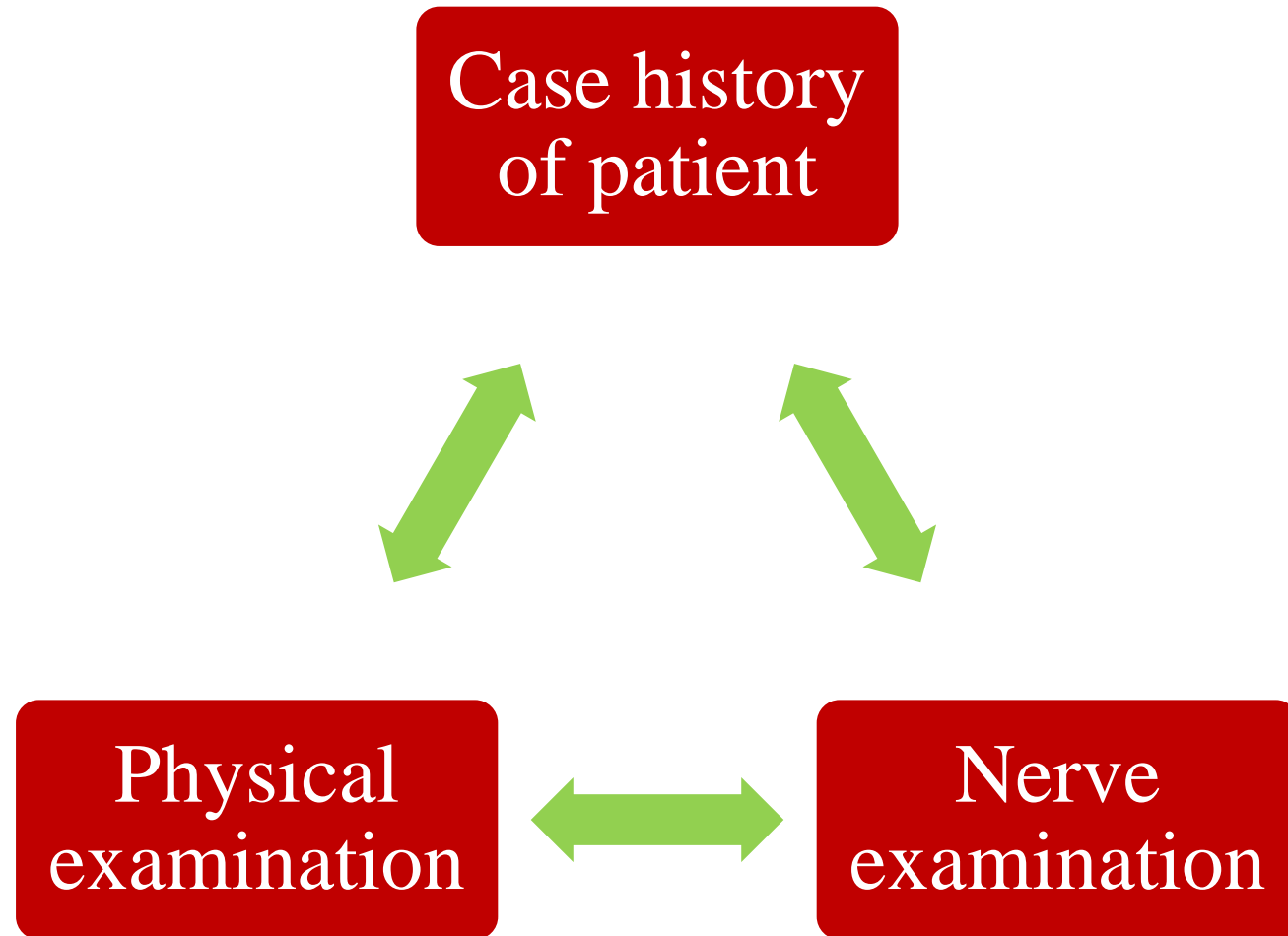
INDIAN

- Indeterminate type
- Tuberculoid type
- Borderline type
- Lepromatous type
- Pure neuritic type

MADRID

- Indeterminate
- Tuberculoid
- Borderline
- lepromatous

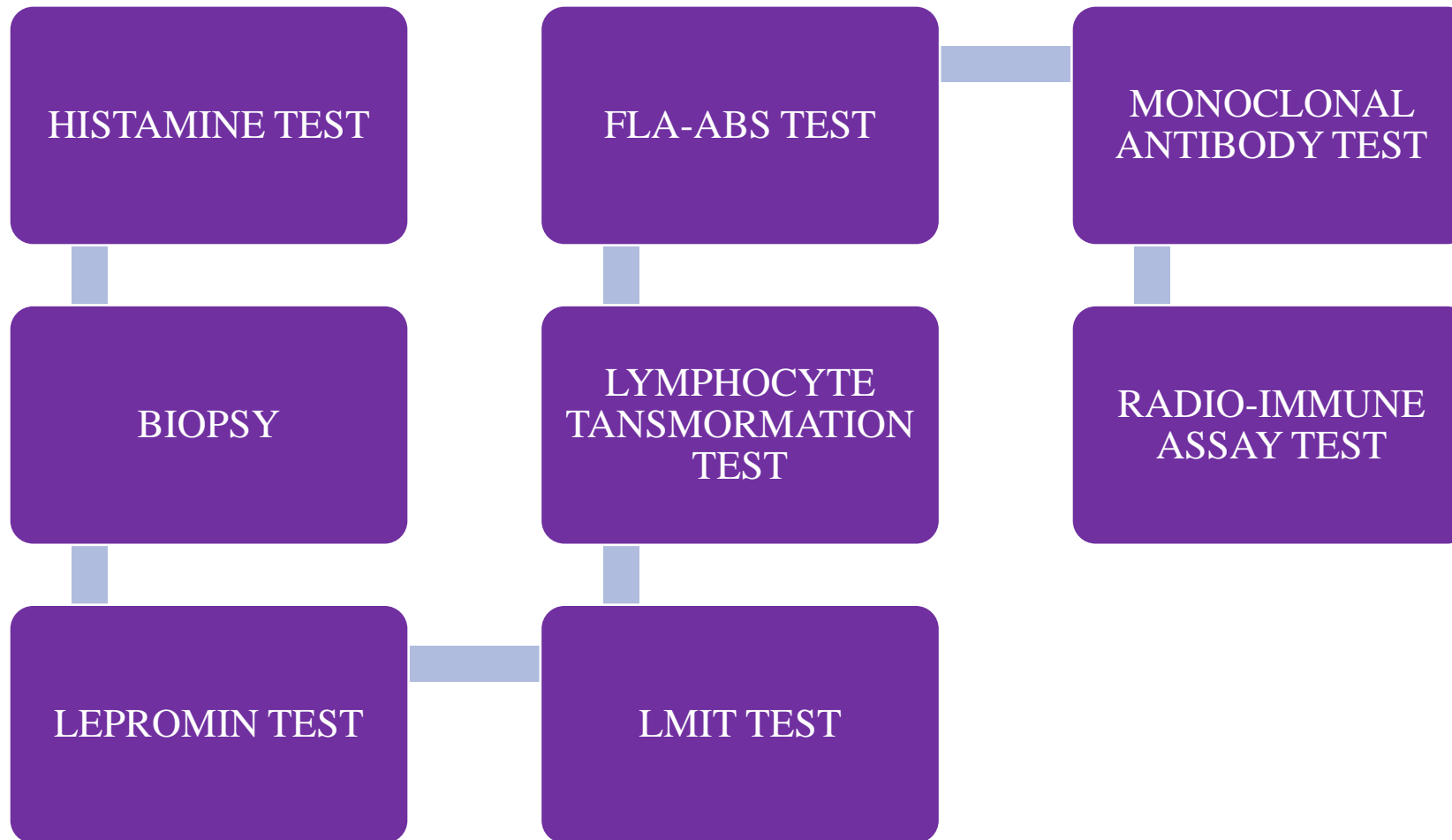
CLINICAL EXAMINATION



DIAGNOSIS

- Hypo-pigmented or reddish skin lesion with definite sensory deficit
- Involvement of the peripheral nerves, as demonstrated by definite thickening with loss of sensation and weakness
- Paralysis of the corresponding muscles of hand, feet or eyes
- Demonstration of *M. leprae*

CLINICAL TESTS



MEDICAL MEASURES

- Estimation of the problem
- Early case detection
- Multi drug therapy
- Drugs
- surveillance
- Health education
- Rehabilitation
- medical and social support

EARLY CASE DETECTION

- Identify and to register all cases of leprosy as soon as possible
- Aware the patient about the disease and reports voluntarily
- Install the device active method to early detection
- Data should compare to different area in different period of time
- Make sure the cases are valid and unambiguous

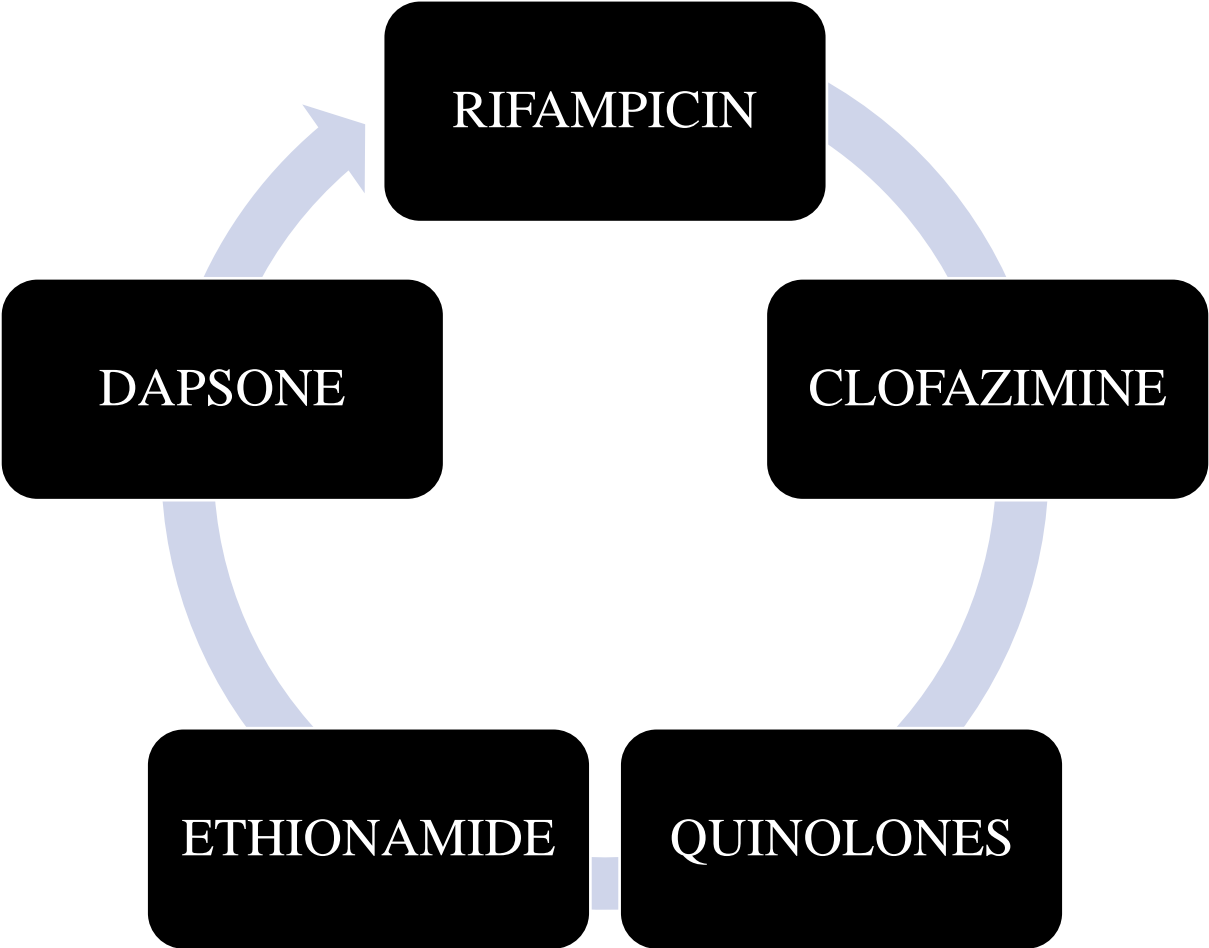
EARLY CASE DETECTION METHOD



MULTI DRUG THERAPY

- To interrupt transmission of infection in the community by sterilizing infectious patients as rapidly as possible with bactericidal drugs
- To ensure early detection and treatment of cases to prevent deformities
- To prevent drug resistance
- It has additional advantage of curtailing the duration of treatment
- Advantage for the patient compliance, cost effectiveness and decreased work load

DRUG



SURVEILLANCE

- PAUCIBACILLARY LEPROSY

It is recommended that case be examined clinically at least once a year for a minimum of 2 years after completion of treatment

- Multibacillary leprosy

It is recommended that case be examined clinically at least once a year for a minimum of 5 years after completion of treatment

REHABILITATION

COMMUNITY BASED REHABILITATION

- Equalization of opportunities and social inclusion of the disabled
- Combined efforts of the people with disabilities
- Combined efforts with family, society and community
- Rehabilitation measures may appear to be require further planning and actions
- Support for medical, surgical, social educational and vocational needs

HEALTH EDUCATION

- Anti-leprosy campaign
- Awareness to patient and his family
- Awareness to General Public

MEDICAL & SOCIAL SUPPORT

- Chemotherapy alone is not likely to solve the whole problem of leprosy
- Economic and social problem of the patient should identify and met
- Assistance to the patient for travel
- Help those who needs in terms of food grains, clothes, care of children and their education, job placement etc

EPIDEMIOLOGICAL INDICATORS

- **INCIDENCE**

Incidence rate are often calculated for different sub group of population. Eg, age, sex, household contact

- **PREVALENCE**

Measure of case load and is useful in the planning of the treatment service. The continued reduction in the prevalence could also given information about the downward trend of the disease

SEXUALLY TRANSMITTED DISEASES

WHAT IS STD

- Sexually transmitted diseases (STD) are a group communicable diseases that transmitted by sexual contact and caused by a wide range of bacterial, viral, protozal and fungal agents
- The contact is usually vaginal, oral, or anal sex. But sometimes they can spread through other intimate physical contact
- This is because some STDs, like herpes and HPV, are spread by skin-to-skin contact.

AGENTS OF STD

BACTERIA

VIRUS

PROTOZOA

FUNGUS

ECTOPARASITES

FACTORS RESPONSIBLE FOR STD

- Prostitution
- Broken homes
- Sexual disharmony
- Easy money
- Emotional immaturity
- Urbanization & Industrialization
- Social disruption
- International travel
- alcoholism

Gonorrhea

- **An infection caused by a sexually transmitted bacterium that infects both males and females.**
- Gonorrhea most often affects the urethra, rectum or throat.
- In females, gonorrhea can also infect the cervix. Gonorrhea is most commonly spread during vaginal, oral or anal sex.
- babies of infected mothers can be infected during childbirth. In babies, gonorrhea most commonly affects the eyes.

Signs and symptoms of gonorrhoea infection

MEN

- Painful urination
- Pus-like discharge from the tip of the penis
- Pain or swelling in one testicle

women

- Increased vaginal discharge
- Painful urination
- Vaginal bleeding between periods, such as after vaginal intercourse
- Abdominal or pelvic pain

Gonorrhea at other sites in the body

- **Rectum.** Signs and symptoms include anal itching, pus-like discharge from the rectum, spots of bright red blood on toilet tissue and having to strain during bowel movements.
- **Eyes.** Gonorrhea that affects your eyes can cause eye pain, sensitivity to light, and pus-like discharge from one or both eyes.
- **Throat.** Signs and symptoms of a throat infection might include a sore throat and swollen lymph nodes in the neck.
- **Joints.** If one or more joints become infected by bacteria (septic arthritis), the affected joints might be warm, red, swollen and extremely painful, especially during movement.

Syphilis

- Syphilis is a bacterial infection. It is easily spread through unprotected anal, vaginal and oral sex without a condom.
- It can also be passed on through sharing contaminated needles and injecting equipment. A mother can pass it on to her unborn baby during pregnancy.
- It's not as common as some **sexually transmitted infections** but if left untreated it can lead to serious health problems.

The infection can be passed on through:

- vaginal, anal or oral sex without a condom or dental dam
- genital contact
- sharing sex toys with someone who has syphilis
- sharing contaminated needles and injecting equipment
- blood transfusions (this is very rare as most places test blood for infections).

Chlamydia

- Chlamydia is a bacterial infection. The bacteria are usually spread through sex or contact with infected genital fluids (semen or vaginal fluid).

IT PASSES THROUGH

- unprotected vaginal, anal or oral sex
- sharing sex toys that are not washed or covered with a new condom each time they're used
- your genitals coming into contact with your partner's genitals – this means you can get chlamydia from someone even if there's no penetration, orgasm or ejaculation
- infected semen or vaginal fluid getting into your eye
- It can also be passed by a pregnant woman to her baby.

Trichomoniasis

- Trichomoniasis is a common sexually transmitted infection caused by a parasite.
- Men who have trichomoniasis typically have no symptoms.
- In women, trichomoniasis can cause a foul-smelling vaginal discharge, genital itching and painful urination.

Symptoms

In women

- A large amount of a thin, often foul-smelling discharge from the vagina — which might be clear, white, gray, yellow or green
- Genital redness, burning and itching
- Pain with urination or sex
- Discomfort over the lower stomach area

In men

- When men do have signs and symptoms, however, they might include:
- Itching or irritation inside the penis
- Burning with urination or after ejaculation
- Discharge from the penis

Chancroid

- Chancroid is an STD caused by bacteria called *Haemophilus ducreyi*.
- It causes bumps that may feel tender when you touch them.
- The bumps fill with pus and may open up and become sores.
- These sores are most often on the genitals and are called [ulcers](#). While chancroid is easily treatable, it also spreads very easily.

Chancroid transmission.

- Chancroid is passed from person to person in two ways. The first is sexual contact with a person who has open sores.
- The second is when the pus-like fluid from the sores is passed from person to person through other physical contact. If you have chancroid sores, touch one of them, and then touch another person, you may pass the infection to them.

Lymphogranuloma venereum

- LGV is a long-term (chronic) infection of the lymphatic system.
- It is caused by certain strains of the bacteria *Chlamydia trachomatis*.
- The bacteria are spread by sexual contact.
- LGV is more common in Central and South America than in North America.

SYMPTOMS

- Drainage through the skin from lymph nodes in the groin
- Painful bowel movements
- Small painless sore on the male genitals or in the female genital tract
- Swelling and redness of the skin in the groin area
- Swelling of the labia (in women)
- Swollen groin lymph nodes on one or both sides; it may also affect lymph nodes around the rectum in people who have anal intercourse
- Blood or pus from the rectum (blood in the stools)

Donovanosis

- Donovanosis is caused by the bacterium *Klebsiella granulomatis*.
- The disease is commonly found in tropical and subtropical areas such as southeast India, Guyana, and New Guinea.
- There are about 100 cases reported per year in the United States.
- Most of these cases occur in people who have traveled to or are from places where the disease is common.

Symptoms

- Symptoms can occur 1 to 12 weeks after coming in contact with the bacteria.
- Symptoms may include:
- Sores in the anal area (in about half of cases)
- Small, beefy-red bumps on the genitals or around the anus

Genital Herpes

- Genital herpes is a sexually transmitted infection (STI). It causes herpetic sores, which are painful blisters (fluid-filled bumps) that can break open and ooze fluid.
- Two types of the herpes simplex virus (HSV) cause genital herpes:
 - **HSV-1.** This type usually causes cold sores, but it can also cause genital herpes.
 - **HSV-2.** This type usually causes genital herpes, but it can also cause cold sores.
- The World Health Organization stated that in 2016, about 3.7 billion Trusted Source people under age 50 years had contracted HSV-1. In the same year, around 491 million people ages 15 to 49 years had an HSV-2 infection.

- The viruses enter the body through skin abrasions or mucous membranes. Mucous membranes are the thin layers of tissue that line the openings of your body. They can be found in your nose, mouth, and genitals.
- Once the viruses are inside the body, they incorporate themselves into the cells. Viruses tend to multiply or adapt to their environments very easily, which makes treating them difficult.

Human papilloma virus (HPV)

- Human papilloma virus (HPV) is a common viral infection that can affect your skin.
- It is passed on through any skin-to-skin contact of the genital area; vaginal, anal or oral sex
- There are a number of different strains of HPV. Most have no symptoms, go away by themselves and don't cause any health problems. Some types can cause genital warts or lead to cervical, anal and other cancers.

Symptoms

- Symptoms of genital warts include:
- one or more small, flesh-coloured or grey painless growths or lumps around your vagina, penis, anus or upper thighs
- itching or bleeding from your genitals or anus
- a change to your normal flow of pee (for example, sideways), that doesn't go away.

TRANSMISSION

- vaginal, anal or oral sex without a condom or dental dam, with someone who has an HPV infection (even if they don't have symptoms)
- close genital contact – this means HPV can be passed on even if there's no penetration, orgasm or ejaculation.

WHO STATUS (2020)

- More than 1 million sexually transmitted infections (STIs) are acquired every day worldwide, the majority of which are asymptomatic.
- Each year there are an estimated 374 million new infections with 1 of 4 STIs: chlamydia, gonorrhoea, syphilis and trichomoniasis.
- More than 500 million people aged 15 to 49 years are estimated to have a genital infection with herpes simplex virus (HSV) (1).
- HPV infection is associated with 570 000 cases of cervical cancer in 2018, and over 311 000 cervical cancer deaths each year (2).
- Almost 1 million pregnant women were estimated to be infected with syphilis in 2020, resulting in over 350 000 adverse birth outcomes including 200 000 stillbirths and newborn deaths (3).
- STIs have direct impact on sexual and reproductive health through stigmatization, infertility, cancers and pregnancy complications and can increase the risk of HIV.
- Drug resistance, especially for gonorrhoea, is a major threat to reducing the burden of STIs worldwide.

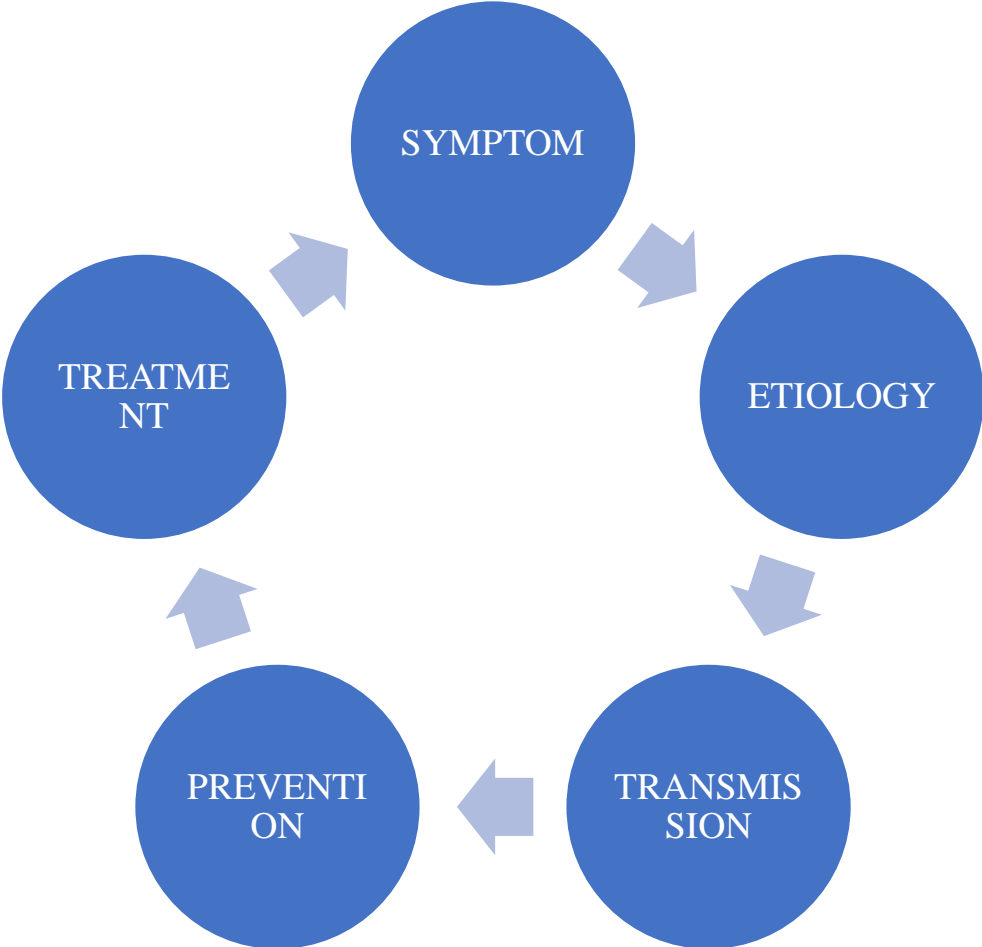
STATISTICS INDIA

- **Every year, about 6 percent of the adult population in India are infected with sexually transmitted infections and reproductive tract infections**
- Every year in India, there are more than 1 million cases of chlamydia reported.
- Syphilis is an STD that starts as a painless sore and spreads through contact via genitals, rectum or mouth. Yet in 2020, around 16,128 men and 13,878 women were reportedly infected with the STD in India.
- In 2020, a total of **677,769** cases of gonorrhoea were reported in India
- estimates that there were **more than one million** trichomoniasis infections in India in 2018
- **Chancroid has been reported as one of the most common sexually transmitted infections in India** — but these reports seem to be based on data from small-scale studies in the 1980s and 90s. The fact is, the exact and current population-wide prevalence of most STIs is unknown in India.

- in approximately 27%–43% of cases and may serve as ... the lymphogranuloma venereum serovars in the Indian population in 2019
- We hereby report six cases of Donovanosis in Central. India registered in two years (2018-2019)
- HSV-2 rates in the general adult population in India have been reported to range from 7.9 to 18.9% [4-6], translating into 100-200 million individuals who have acquired HSV-2 infection.(2020)
- The current estimates indicate approximately 132,000 new HPV cases diagnosed and 74,000 deaths annually in India, accounting to nearly 1/3rd of the global cervical cancer deaths.

TUBERCULOSIS

TUBERCULOSIS



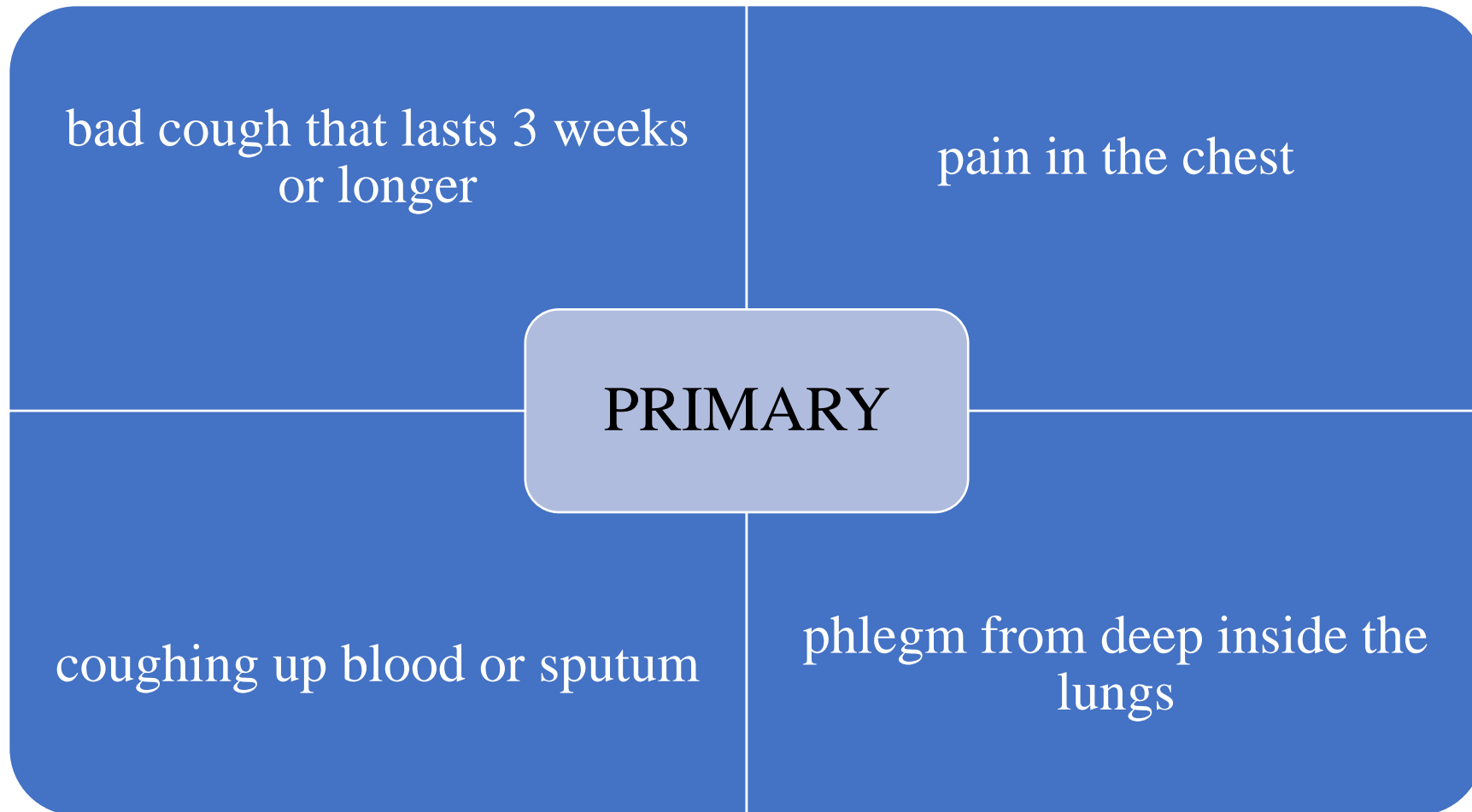
WHAT IS TB

- Tuberculosis (TB) is caused by a bacterium called *Mycobacterium tuberculosis*.
- TB disease in the lungs or throat can be infectious.
- The bacteria usually attack the lungs, but TB bacteria can attack any part of the body such as the kidney, spine, and brain.
- TB bacteria spread through the air from one person to another.
- When a person with TB disease of the lungs or throat coughs, speaks, or sings, TB bacteria can get into the air. People nearby may breathe in these bacteria and become infected.
- When a person breathes in TB bacteria, the bacteria can settle in the lungs and begin to grow.

SIGNS & SYMPTOMS

- Symptoms of TB disease depend on where in the body the TB bacteria are growing.
- TB bacteria usually grow in the lungs (pulmonary TB).
- Most people infected with the bacteria that cause tuberculosis don't have symptoms.
- Patients with active symptoms will require a long course of treatment involving multiple antibiotics.

MAJOR SYMPTOMS



bad cough that lasts 3 weeks
or longer

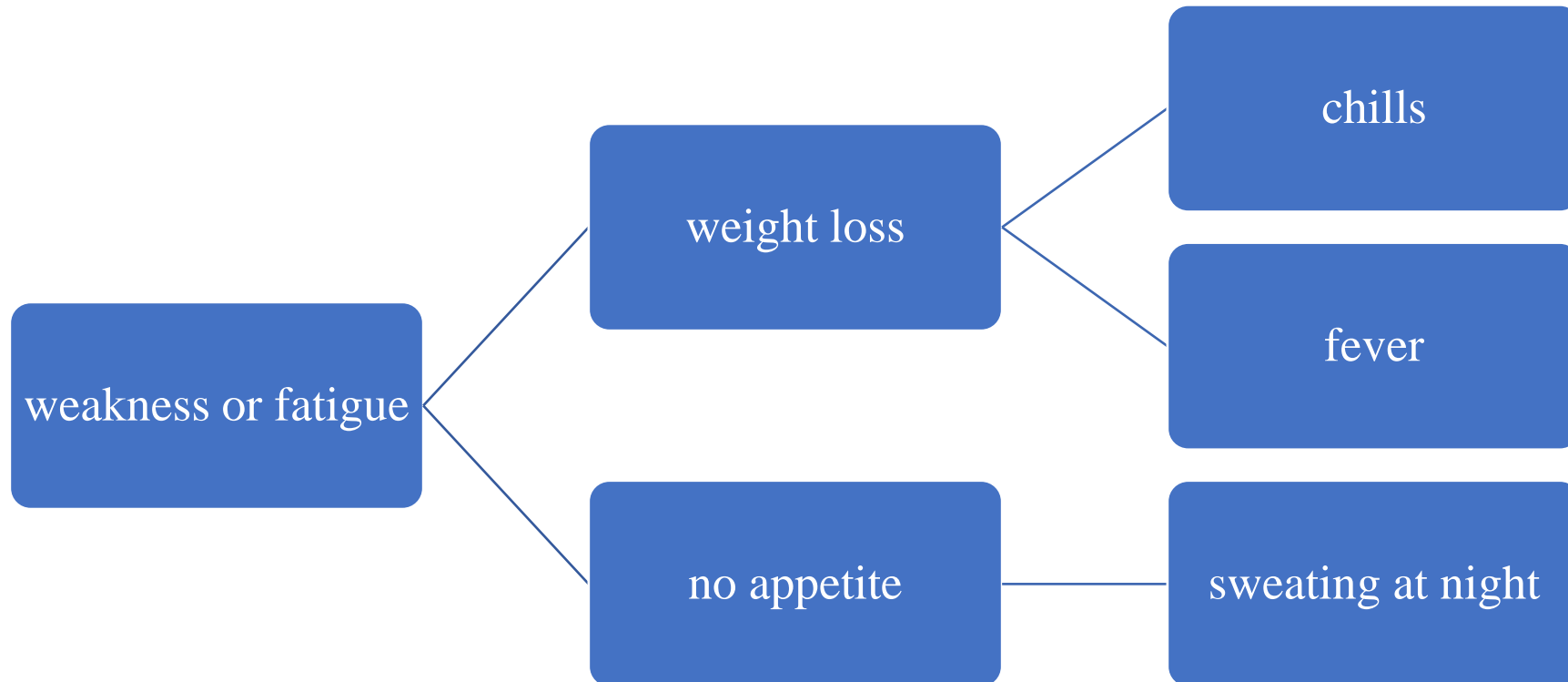
pain in the chest

PRIMARY

coughing up blood or sputum

phlegm from deep inside the
lungs

OTHER SYMPTOMS



ETIOLOGY OF TB

- TB is an infectious disease caused by bacteria of the Mycobacterium tuberculosis complex, of which *M. tuberculosis* is the most common and important agent causing human disease.
- Similar disease occasionally results from the closely related mycobacteria, *M. bovis*, *M. africanum*, and *M. microti*.
- In 1882, Robert Koch demonstrated that the tubercle bacillus was the true cause of TB, a discovery for which he received the Nobel Prize in 1905.

TRANSMISSION OF TB

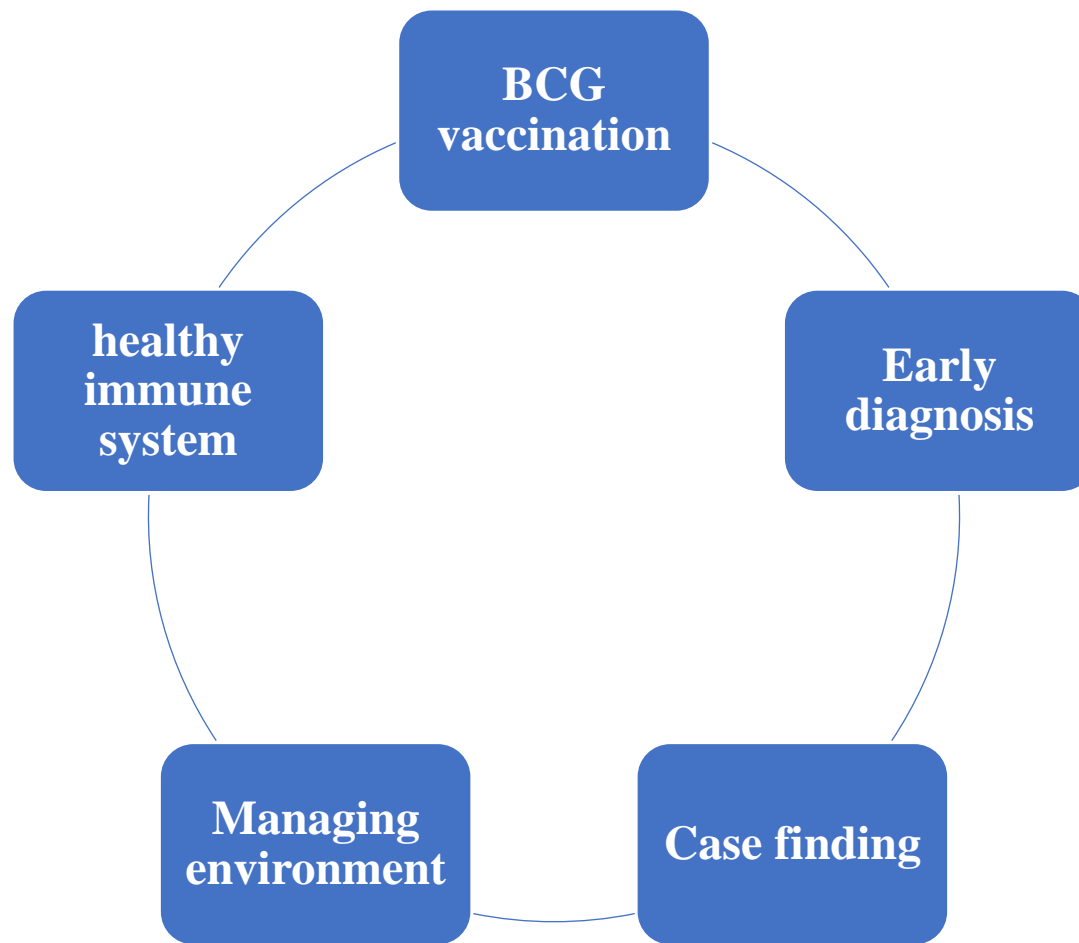
- Tuberculosis (TB) is transmitted from an infected person to a susceptible person in airborne particles, called droplet nuclei
- These are 1–5 microns in diameter.
- These infectious droplet nuclei are tiny water droplets with the bacteria that are released when persons who have pulmonary or laryngeal tuberculosis cough, sneeze, laugh, shout etc.
- These tiny droplet nuclei remain suspended in the air for up to several hours. Tuberculosis bacteria, however are transmitted through the air, not by surface contact.
- Transmission occurs when a person inhales droplet nuclei containing tuberculosis bacteria.
- These droplet nuclei travels via mouth or nasal passages and move into the upper respiratory tract.

What determines the risk of transmission of Tuberculosis

- If the person it is transmitted to is susceptible to the tuberculosis infection.
- If the person transmitting the infection is at the infectious stage of the disease.
- If the environment is suitable for transmission.
- presence of more droplet nuclei, exposure to the infection in a small, closed and cramped space with poor ventilation and positive air pressure etc. Improper handling of laboratory specimen containing the bacteria is another reason for transmission.
- The length of exposure of the susceptible person to the person transmitting the infection.
- The longer the duration of exposure, proximity or closeness to the infected person, and frequency of exposure, the higher the risk of getting the infection.

PREVENTION OF TB

- TB, is still a real concern today, an ounce of prevention is worth a pound of cure.
- TB disease and this risk depends on multiple factors, the most important being the state of their immune system.
- WHO supports countries to prevent TB infections through guidance and implementation of infection prevention and control measures.
- These measures are critical in situations where the risk of TB transmission is high, such as health-care facilities, congregate settings and TB-affected households.
- WHO also promotes preventive action through early screening and treatment for active TB, by addressing co-morbidities and health risks as well as social determinants of the disease, and by promoting access to universal health care.
- WHO advises and guides the TB vaccine development activities of the global research community through scientific consensus-building, guidance on vaccine evaluation, and assessment of the evidence base for policy recommendations.



BCG vaccination

- The BCG (Bacille Calmette-Guérin) is a live vaccine against tuberculosis.
- The vaccine is prepared from a strain of the weakened bovine tuberculosis bacillus

Early diagnosis

- Early diagnosis and treatment is the most effective way to prevent the spread of tuberculosis.
- A person with infectious tuberculosis can infect up to 10–15 other people per year. But once diagnosed with TB, and started on treatment, the majority of patients are no longer infectious after just two weeks of taking the medication.

Case finding

- Limiting the spread of TB depends on successfully finding and treating people with the illness, to prevent them from passing it on to others.
- This can be done through raising awareness of TB

Managing environment

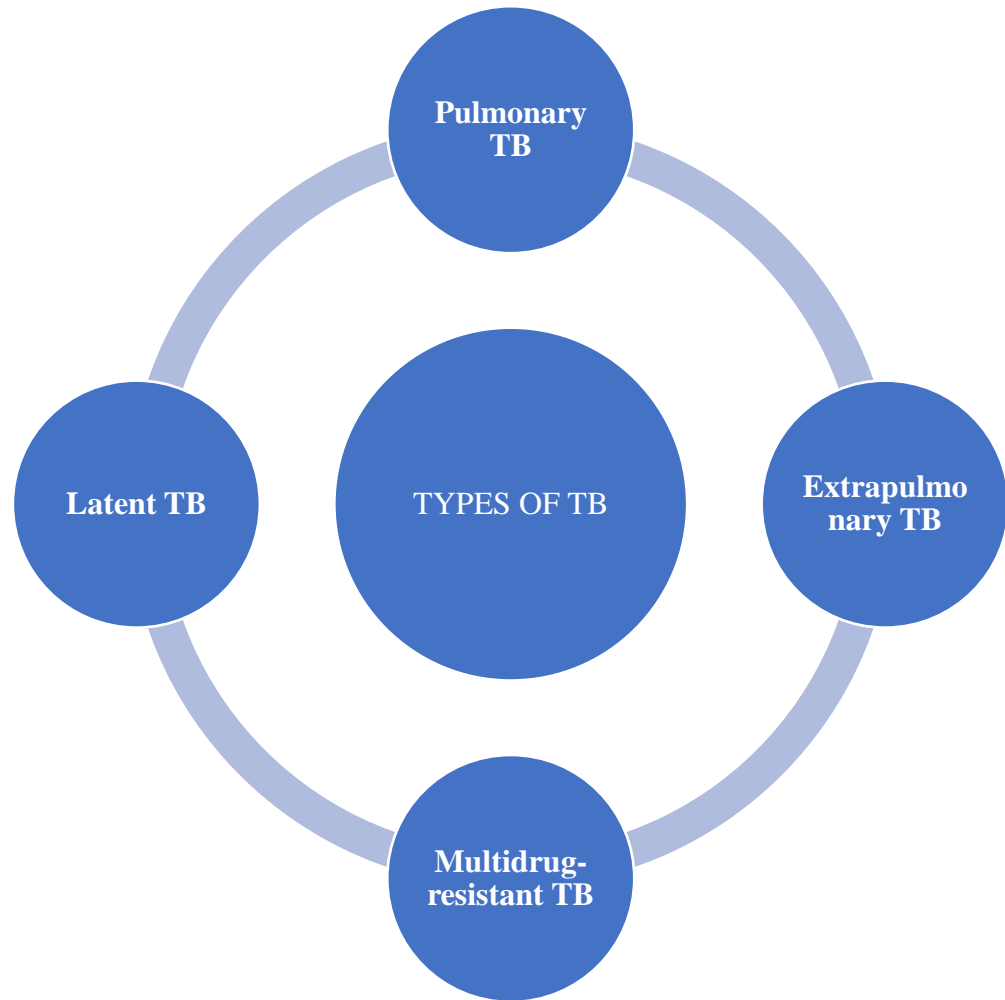
- TB bacteria are released into the air when someone with infectious TB coughs or sneezes.
- good ventilation, natural light, good hygiene
- The risk of infection can be reduced by using a few simple precautions

healthy immune system

- Having a healthy immune system is the best form of defense against TB
- 60% of adults with a healthy immune system can completely kill TB bacteria.

TREATMENT OF TB

- **Treatment for tuberculosis (TB) usually involves taking antibiotics for several months.**
- While TB is a serious condition that can be fatal if left untreated, deaths are rare if treatment is completed.
- There is different type of treatment are used to prevent and treat different type of TB.



Pulmonary TB

- 2 antibiotics (isoniazid and rifampicin) for 6 months
- 2 additional antibiotics (pyrazinamide and ethambutol) for the first 2 months of the 6-month treatment period
- It may be several weeks before you start to feel better. The exact length of time will depend on your overall health and the severity of your TB.
- After taking antibiotics for 2 weeks, most people are no longer infectious and feel better.
- Taking medication for 6 months is the best way to ensure the TB bacteria are killed.

- **Extrapulmonary TB**

TB that occurs outside the lungs – can be treated using the same combination of antibiotics as those used to treat pulmonary TB.

- **Multidrug-resistant TB**

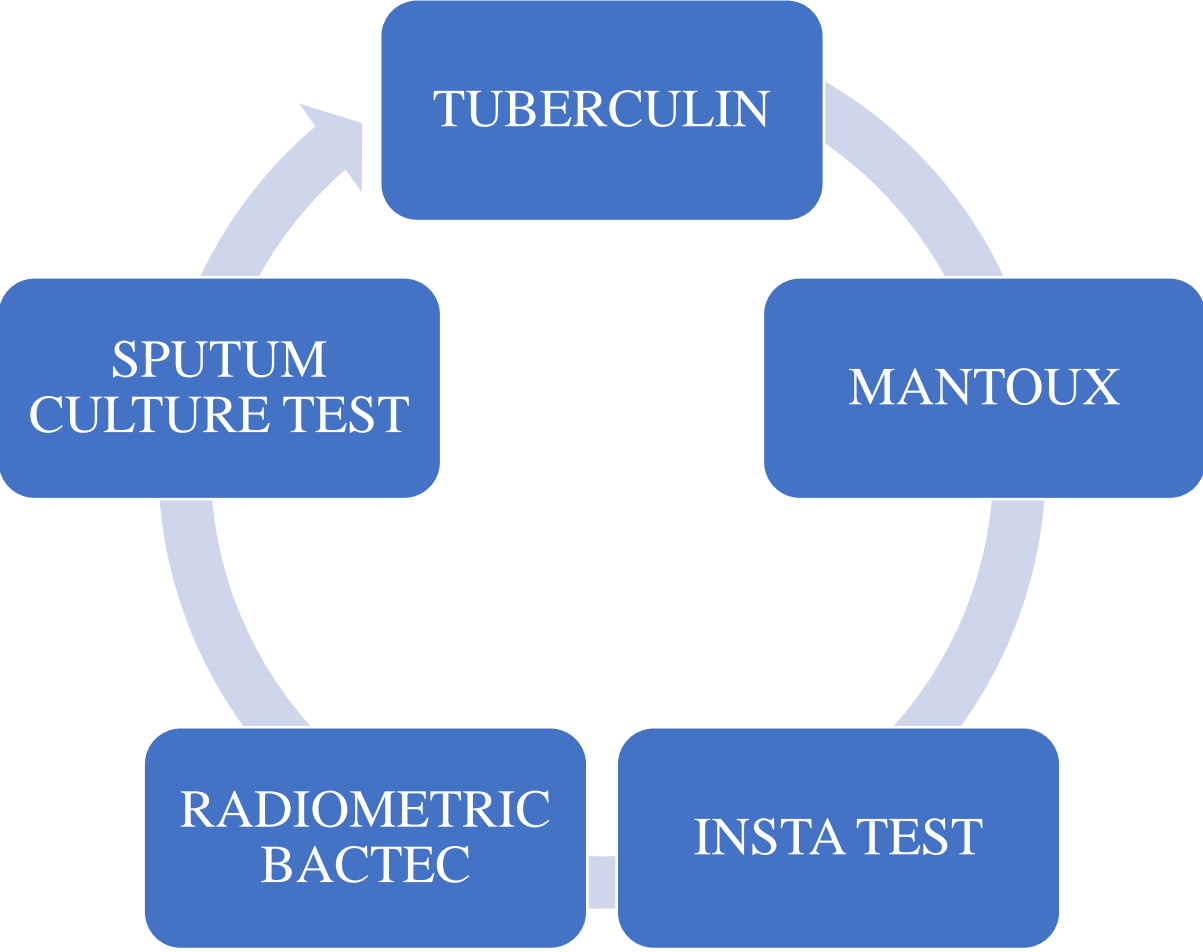
strains of TB that are resistant to 2 or more antibiotics.

Multidrug-resistant TB requires a much longer course of antibiotics; between 9 to 24 months depending on the strain. Multidrug-resistant TB tends to have less favourable outcomes than standard TB.

Latent TB

- Latent TB is where you've been infected with the TB bacteria, but do not have any symptoms of active infection.
- the antibiotics used to treat TB can cause liver damage in older adults.
- Latent TB is also not always treated if it's thought to be drug resistant. If this is the case, you may be regularly monitored to check the infection does not become active.
- testing and treatment for latent TB may be recommended for people who require treatment that will weaken their immune system, such as long-term steroid medicines, chemotherapy or biological inhibitors like TNF inhibitors.
- either taking a combination of rifampicin and isoniazid for 3 months
- or isoniazid on its own for 6 months

DRUGS USED FORTREATMENT OF TB



Side effects of treatment

- being sick
- yellowing of your skin and the whites of your eyes
- an unexplained high temperature
- tingling or numbness in your hands or feet
- a rash or itchy skin
- changes to your sight, such as blurred vision
- Rifampicin can also interact with other medication, so it's important that your TB team know about all of the medicine you're taking before you start treatment for TB.

SEVERE ACUTE RESPIRATORY SYNDROME(SARS)

SARS

- ❖ Communicable viral disease, caused by a new strain of coronavirus, which differs considerably in genetic structure from previously recognized coronavirus
- ❖ The common symptoms in patient progressing to SARS include fever, malaise, chills, headache myalgia, dizziness, cough, sore throat and running nose
- ❖ In some cases there is rapid deterioration with low oxygen saturation and acute respiratory distress requiring ventilator support
- ❖ It is capable of causing death in as many as 10 % cases
- ❖ chest X-ray findings typically begin with a small, unilateral patchy shadowing, and progress over 1-2 days to become bilateral and generalized, with interstitial/confluent infiltration
- ❖ Adult respiratory distress syndrome has been observed in a number of patients in the end stages.

SARS

- The earliest case was traced to a health care worker in China, in the late 2002, with rapid spread to Hong Kong, Singapore, Vietnam, Taiwan and Toronto
- August 2003 about 8,442 cases were reported by WHO
- The mode of transmission appears to be through direct or indirect contact of mucous membranes of eyes, nose, or mouth with respiratory droplets or fomites
- The use of aerosol- generating procedures (endotracheal intubation, bronchoscopy, nebulization treatments) in hospitals may amplify the transmission of the SARS Coronavirus
- The virus is shed in stools but the role of faecal – oral transmission is unknown
- The SARS virus can survive for hours on common surface outside of the human body, and up to four days in human waste
- the virus can survive at least for 24 hours on a plastic surface at room temperature, and can live for extended periods in the cold

Epidemiological aspect

- Health care workers, especially those involved in procedures generating aerosols, accounted for 21% of all cases
- maximum virus excretion from the respiratory tract occurs on about day 1 of illness and then declines
- The efficiency of transmission appears to be greatest following exposure to severely ill patients or those experiencing rapid clinical deterioration, usually during the second week of illness
- Symptomatic cases were isolated within 5 days of the onset of illness, few cases of secondary transmission occurred
- There was no evidence that patient transmits infection 10 days after fever has resolved
- children are rarely affected by SARS

Treatment

- Severe cases require intensive support
- Although a number of different agents including ribavirin (400- 600 mg/d and 4 g/d)
- lopinavir/ritonavir (400mg/ 100 mg)
- Interferon type 1, intravenous immunoglobulin and systematic corticosteroids were used to treat SARS patients during 2003 epidemic
- The treatment efficacy of these therapeutic agents remains inconclusive and further research is needed.
- Subsequent studies with ribavirin show no activity against the virus in vitro, and a retrospective analysis of the epidemic in Toronto suggests worse outcomes in patients who receive the drug

Prevention

- As there is no vaccine against SARS, the preventive measures for SARS control are appropriate detection and protective measures which include:-
- Prompt identification of persons with SARS, their movements and contacts
- Effective isolation of SARS patients in hospitals
- Appropriate protection of medical staff treating these patients
- Comprehensive identification and isolation of suspected SARS cases
- Simple hygienic measures such as hand- washing after touching patients, use of appropriate and well-fitted masks and introduction of infection control measures
- Exit screening of international travelers
- Timely and accurate reporting and sharing of information with other authorities and/or governments

ACCIDENT & INJURIES

ACCIDENT

- An accident has been defined as an unexpected or unplanned occurrence which may involve injury
- Accident is an unpremeditated event resulting in recognizable damage (WHO)
- An accident is that occurrence in a sequence of events which usually produces unintended injury, death or property damage

MEASUREMENT OF THE PROBLEM

MORTALITY

- Number of deaths due to accidents per 100 or 1000

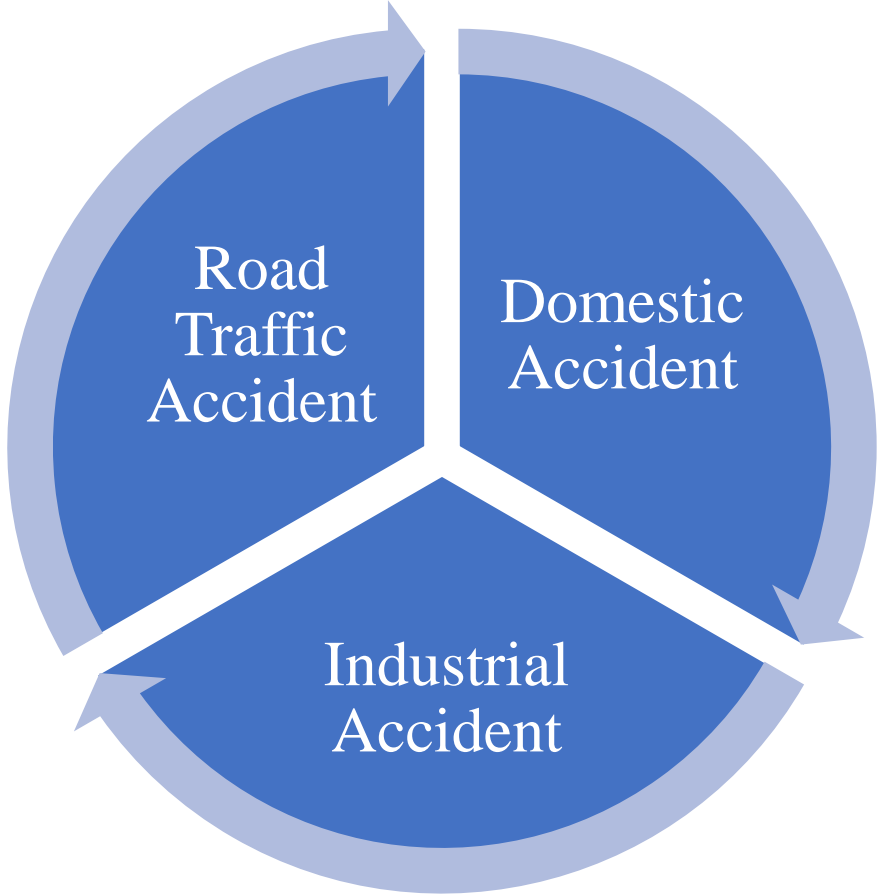
MORBIDITY

- Serious injury and slight injury

DISABILITY

- Temporary or Permanent loss

TYPES OF ACCIDENTS



ROAD TRAFFIC ACCIDENT

- First among all fatal accident in the world
- Every year almost 1.25M people die from all over the world
- Rate is higher in young age groups
- Male young are more likely to be involved rather than female
- 90% of deaths occurs in low and middle income countries
- Compare to four wheeler two wheeler are leading accident rate

RISK FACTORS

SPEED

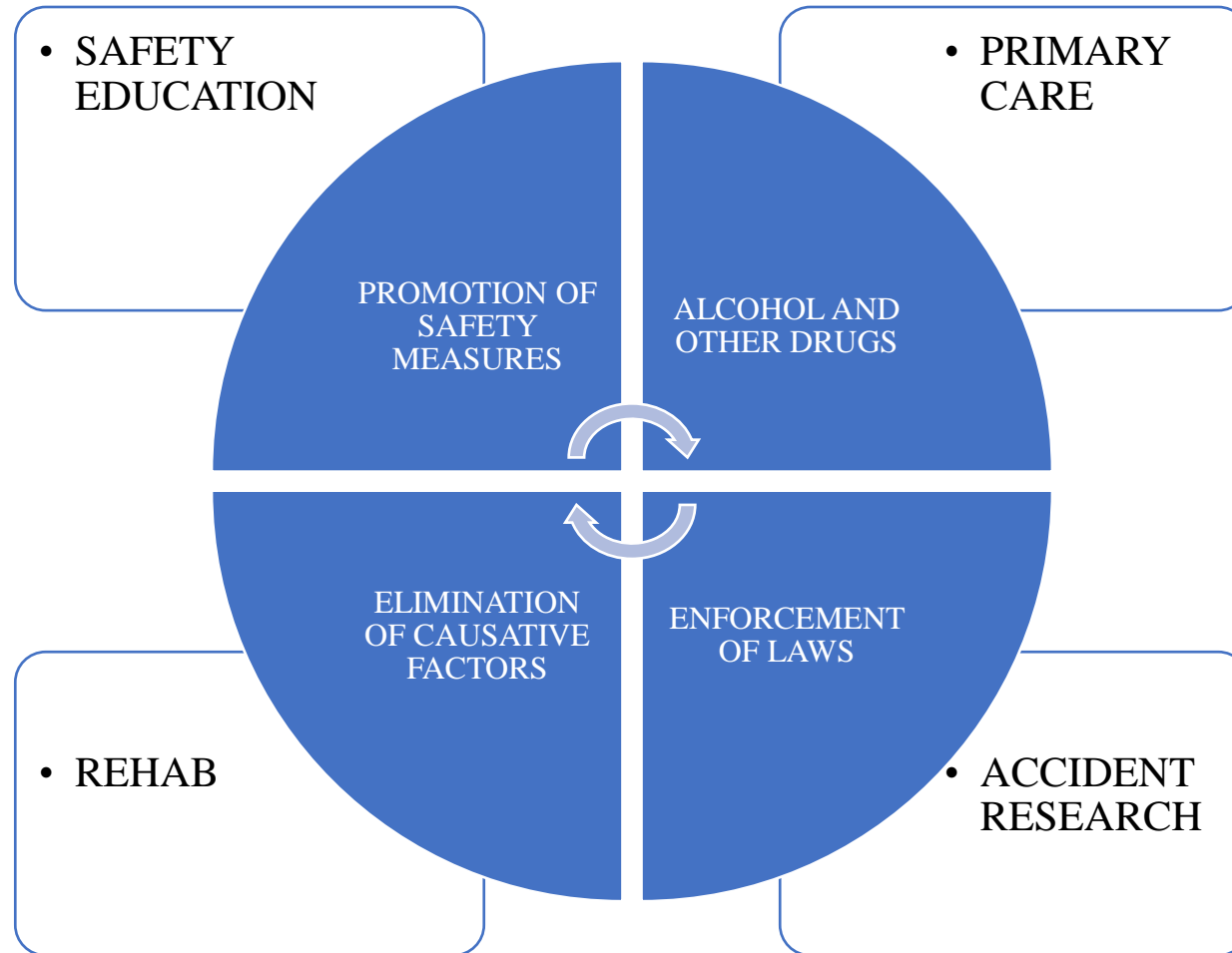
DRINK DRIVING

HELMET

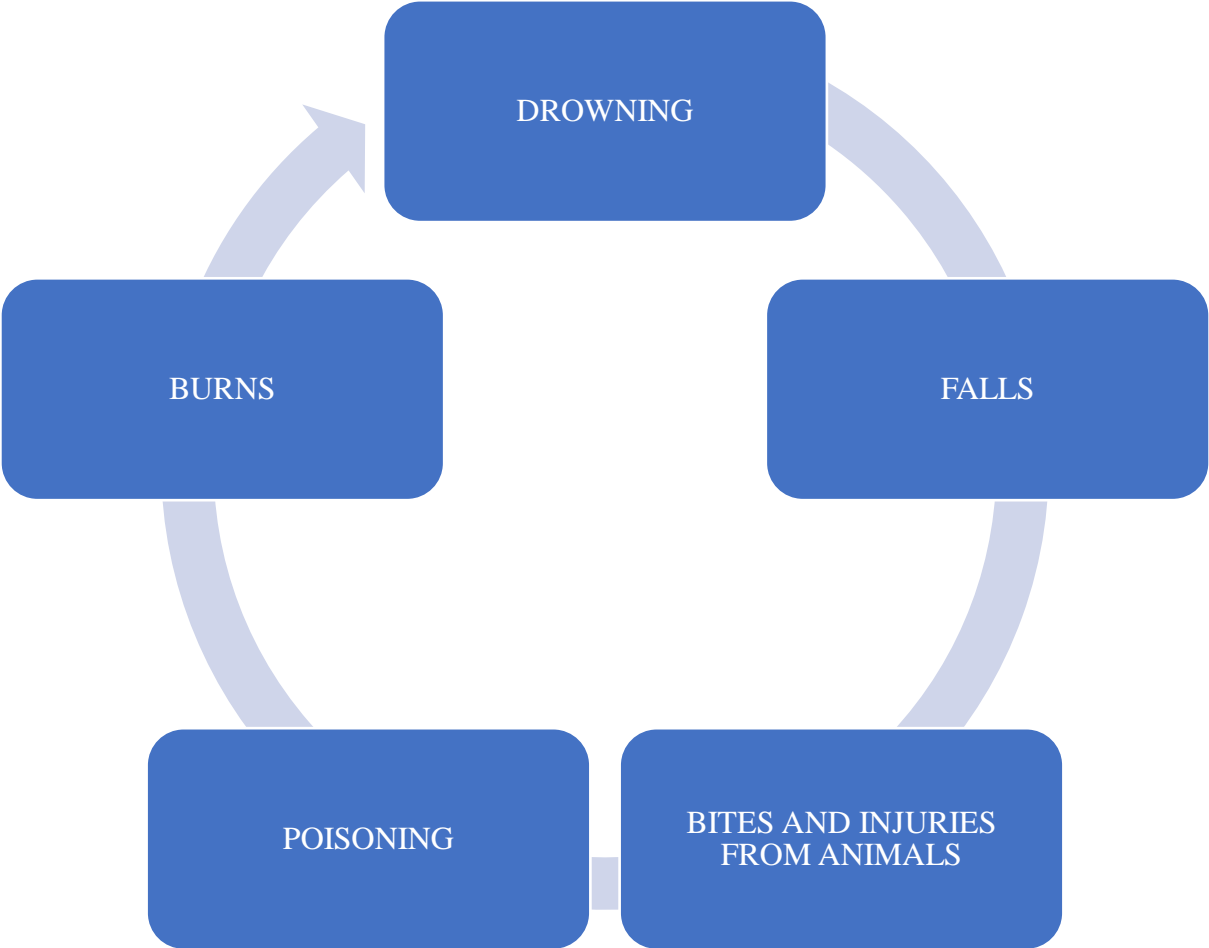
SEAT BELTS

DISTRACTED
DRIVING

PREVENTION



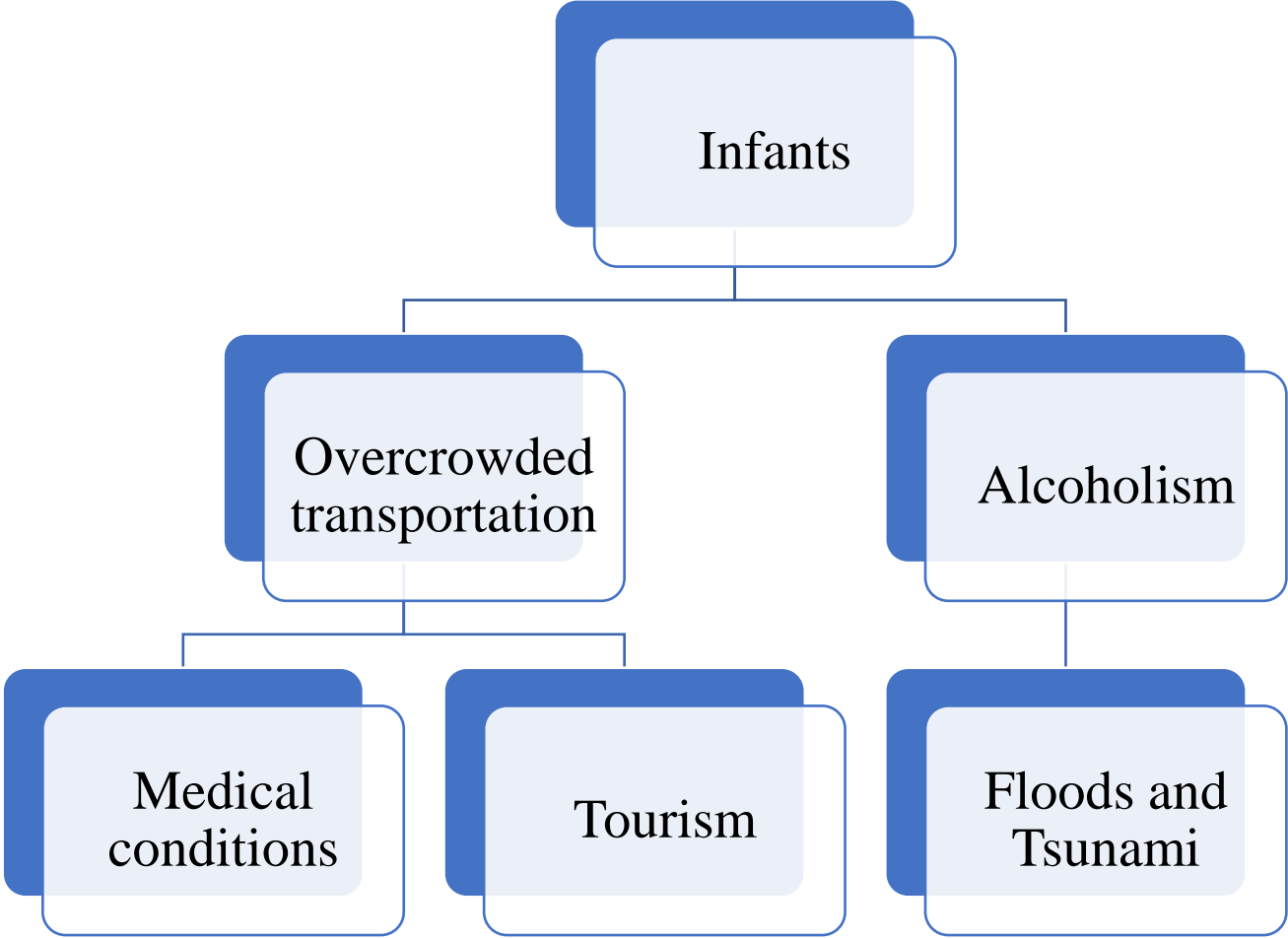
DOMESTIC ACCIDENTS



DROWNING

- Experiencing respiratory impairment from submersion in liquid
- Loses consciousness after approximately 2 minutes of immersion
- 4 – 6 minutes leads to brain damage
- 3rd leading cause of accidental death in the world
- Common method of suicide
- Found in whole countries in the world

RISK FACTOR



BURNS

- Injury to the skin or other organic tissue
- Primarily caused by heat or radiation
- Global public health problem
- Estimated 180, 000 deaths annually
- Hot liquids
- Hot solids
- Flames
- Commonly occurs in home and industry settings

EMERGENCY DO

- Stop the burning process by removing clothing and irrigating the burns
- Use cool running water to reduce the temperature of the burn
- Allowing the person to roll on the ground or by applying a blanket, or by using water
- In chemical burns remove or dilute the chemical agent by irrigating with large volumes of water
- Wrap the patient in a clean cloth or sheet and transport medical care

DON'Ts

- Do not start first aid before ensuring the safety
- Do not apply paste, oil or turmeric to the burn
- Do not apply ice
- Avoid prolonged cool water
- Do not apply any material directly into the wounds
- Avoid the self medication

FALLS

- Second leading unintentional injury death in every year after road traffic injury
- Falls are responsible for the largest number of hospital visit for non fatal injuries
- Rooftop, balcony, windows, stair case are common
- Occupations are responsible (picking fruits, tapping toody)
- Side effects of medication physical problems
- Unsafe environment

POISONING

- More than 2lakh deaths occurring every year in the world
- Pesticide, Kerosene, Prescription drugs and household chemicals are common
- Toxic pesticides used for agriculture
- Prevalence is very high in Sri Lanka for suicide

SNAKE BITE

- Common in tropical and sub tropical countries
- 5M snake bites in every year in the world
- Most occurs in Africa, Asia and Latin America
- The impact of the bite is depended upon the venom injected by the snake.
- Venomous and non venomous snake bit have impact in body
- 70% of snake bites are non venomous

FIRST AID

- Use bandages or cloth to hold the splints
- Do not block the flow of blood or apply any pressure
- Do not give alcoholic beverages
- Remove the items or cloth which constrict the bitten limb (ring, watches, bracelets, footwear)
- Do not apply any self medication
- Immediate medical care

INDUSTRIAL ACCIDENTS

- Agriculture, Fisheries, Home industry and Small scale units are considered
- Work related injuries and deaths coming under this
- The incident rates and prevalence of injuries are rising every year
- Construction workers, Hazardous industry labors are the risk factors
- Railway accidents

CHOLERA

CHOLERA

- Acute diarrhoeal disease caused by V.Cholerae O 1 (Classical or E1 Tor) and O139
- It is now commonly due to the E1 Tor biotype and O139
- Cases range from symptomless to severe infections are mild or asymptomatic
- Typical cases are characterized by the sudden onset of profuse, effortless, watery diarrhoea followed by vomiting, rapid dehydration, muscular cramps and suppression of urine
- Unless there is rapid replacement of fluid and electrolytes, the case fatality may be as high as 30 to 40 %

Problem Statement

- The number of cholera cases reported to WHO continues to rise
- 2019- 9,23,037 cases were notified from 55 countries, including 2,420 deaths
- Many more cases were unaccounted for due to limitations in surveillance systems and fear to trade and travel sanctions
- True burden of the disease estimated to be 1.3-4.0 million cases and 21,000-1,43,000 deaths annually
- Two serogroups of *V. cholerae*-O1 and O139- cause outbreaks
- *V.cholera* O1 cause the majority of outbreaks
- O139-first identified in Bangladesh in 1992
- Non-O1 and non- O139 *V.cholera* can cause mild diarrhoea but do not generate epidemics
- New E1 Tor variant strains have been detected in several parts of the Asia and Africa
- These strains more severe cholera with higher case fatality rates

Problem Statement

- Recent studies indicates global warming creates favorable environment for the bacteria
- Cholera transmission is closely linked to inadequate environmental management
- Risk area- Peri-urban slums, basic infrastructure not available consequences of a disaster, disruption of water and sanitation system, over crowded camps
- Risk of cholera transmission increases, should the bacteria be present or introduced
- Epidemics have never arisen from dead bodies

Problem Statement

- Cholera remains a global threat to public health and a key indicator of lack of social development
- The dynamics of cholera occurrences since 2005, combined with the emergence of new strains that lead to a severe clinical presentation
- Increased antimicrobial resistance
- Climate change
- Cholera may well return to the forefront of the global public health agenda

INDIA

- Cholera E1 Tor biotype in 1964
- West Bengal – “ Home”of cholera
- The bacteriology of cholera also presents a changed picture
- For reasons that are not known, there has been no large scale epidemic of classical 1964
- E1 Tor biotype of *V. cholerae* O1 has rapidly replaced the classical biotype in all parts of the country
- Most of the E1 Tor biotype isolated today belong to the serotype Ogawa.

INDIA

- During 2018, about 651 cholera cases were reported in India with 6 deaths
- Majority of the cases were reported from Uttar Pradesh (153)
- Delhi -134
- West Bengal -126
- Gujarat- 106

Epidemiological Features

- Epidemic and endemic disease (local)
- The epidemicity and endemicity of a disease will depend on the characteristics of the agent and the system
- Characteristics of the agent which influence its distribution include its ability to survive in a given environment
- Virulence
- Average number of organisms required to cause infection
- Cholera creates problem only in the areas where sanitation is defective

Epidemiological features

- Epidemics of cholera are characteristically abrupt and often create an acute public health problem
- High potential to spread fast and cause deaths
- The epidemic reaches a peak and subsides gradually as the “force infection” declines
- Cholera epidemic in a community is self- limiting
- This attributed to the acquisition of temporary immunity
- As well as due to the occurrence of a large number of subclinical cases

Epidemiological features

- Force of infection is composed of 2 components
- Force of infection through water
- force of infection through contacts
- Elimination of contaminated water does not immediately bring an outbreak to an end
- But a so called “tail” of the epidemic is produced
- This is due to the continuation of transmission through contacts

Epidemiological features

- In areas where cholera is endemic, it does not show a stable endemicity
- It undergoes seasonal fluctuations as well as epidemic outbreaks
- The seasonal variation differs between countries and even between regions of the same countries
- The seasonal incidence is also subject to change
- For example:- The disease common in summer- Kolkata
- Winter- Bangladesh
- In both places is most frequent in autumn
- The some parts of India, the peak incidence is in August

Epidemiological Determinants

AGENT

- The organism that causes cholera is labelled as V. Cholerae O Group 1 or Vibrio cholerae O1 and O139
- Endemic strain used for these vibrios
- Vibrios that are biochemically similar to the epidemic strains but do not agglutinate in V. cholerae O1 and O139 antiserum have been referred to in the past as non-agglutinating vibrios or as non-cholera vibrios
- E1 Tor biotype was first isolated at the E1 Tor quarantine station in Egypt in 1905
- Cholera is mostly by the E1 Tor biotype and O139
- Classical and E1 Tor vibrios further divided each into three serological types namely Inaba, Ogawa and Hikojima
- E1 Tor vibrios isolated in India- Ogawa serotype

Epidemiological Determinants

- The E1 Tor biotype which are known for their haemolytic property
- lost this property as the pandemic progressed
- They may be distinguished from classical vibrios by the following tests
- E1 Tor vibrios agglutinate chicken and sheep erythrocytes
- Resistant to classical phage IV
- Resistant to polymyxin B-50-unit disc and
- The VP reaction and haemolytic test do not give consistent results

Resistance

- V.Cholerae are killed within 30 minutes by heating at 56 deg. C
- Few seconds by boiling
- They remain in ice for 4-6 weeks or longer
- Drying and sunshine will kill them in a few hours
- They are easily destroyed by coal tar disinfectants such as cresol, bleaching powder

Toxin Production

- The vibrios multiply in the lumen of the small intestine
- Produce an exotoxin
- Exotoxin has no effect on any other tissue except the intestinal epithelial cells

Reservoir of Infection

- Human being is the only known reservoir of cholera infection
- Case or carrier
- Cases range from inapparent infections to severe ones
- 75% of the people infected with *V.cholera* do not develop any symptoms
- 20% develop acute watery diarrhoea with severe dehydration.
- Carriers are usually temporary, rarely chronic
- Carriers are best detected by bacteriological examination of the purged stool induced by the administration of 30-60 gram of magnesium sulphates in 100 ml of water by mouth

Infective Material

- The immediate source of infection are the stools and vomit of cases and carriers
- Large numbers of vibrios are present in the watery stools of cholera patients
- Average patients excretes 10-20 liters of fluid
- Carriers excrete fewer vibrios than cases

Infective Dose

- Cholera is dose related
- Infection occurs- Number of vibrios ingested exceeds the dose that is infective for the individual

Period of Communicability

- A case of cholera is infectious for a period of 7-10 days
- Convalescent carriers are infectious for 2-3 weeks
- The chronic carrier state may last from a month up to 10 years

Carriers

- Preclinical or Incubatory Carriers
- Convalescent Carrier
- Contact or Healthy Carrier
- Chronic Carrier

Host Factors

- Age & Sex:- All ages and both sexes, attack rate highest in children.
- Gastric Acidity:- An effective barrier. The vibrio is destroyed in an acidity of Ph 5 or lower.
- Population Mobility:- Movement of population results in increased risk of exposure to infection.
- Economic Status:- The incidence of cholera tends to be the highest in the lower socio-economic groups, and this is attributable mainly to poor hygiene
- Immunity:- An attack of cholera is followed by immunity to reinfection, but the duration and degree of immunity are not known.
- Vaccination gives only temporary , partial immunity for 3-6 months

Mode of Transmission

- Faecally contaminated water
- Contaminated Food and Drinks
- Direct Contact(Person to person through contaminated fingers, carelessly handling excreta and vomit of patients and contaminated linen and fomites)

Clinical Features

- Stage of Education :- The onset is abrupt with profuse, painless, watery diarrhoea followed by vomiting. The patient may pass as many 40 stools in a day
- Stage of Collapse:- The patient soon passes into a stage of collapse because of dehydration. Signs are: sunken eyes, hollow cheeks, scaphoid abdomen, abnormal temperature
- Stage of Recovery:- If death does not occur, the patient begins to show signs of clinical improvement.
- The blood pressure begins to rise, the temperature returns to normal, and urine secretion is re-established
- If anuria persists the patient may die of renal failure

Laboratory Diagnosis of Cholera

- Collection of stools
- Vomitus
- Water
- Food samples
- Transportation
- Direct Examination
- Culture Methods
- Characterization
- Biochemical Tests
- Further Characterization

Control of Cholera

Verification of the diagnosis

- It is important to have confirmation of the outbreak as quickly as possible
- All cases of diarrhoea should be investigated even on the slightest suspicion
- Once the presence of cholera has been proved, not necessary to culture stools of all cases or contacts
- Bacteriological diagnosis of cholera envisages a well organized system of laboratory services in the community

Notification

- Notifiable disease locally and nationally
- International Health Regulations, cholera is notifiable to the WHO within 24 hours of its occurrence by the National Government
- The number of cases and deaths are also to be reported daily and weekly till the area is declared free of cholera
- It is declared when twice the incubation period (10 days) has elapsed since the death, recovery or isolation of the last case

Prevention

- Early case finding
- Establishment of treatment centers
- Rehydration therapy
- Adjuncts therapy
- Epidemiological investigations
- Sanitation measures
- Chemoprophylaxis
- Vaccination
- Health education

Cholera

- Cholera is a bacterial disease usually spread through contaminated water. Cholera causes severe diarrhea and dehydration. Left untreated, cholera can be fatal within hours, even in previously healthy people. Modern sewage and water treatment have virtually eliminated cholera in industrialized countries.
- An estimated 1.3 to 4 million people around the world get cholera each year and 21,000 to 143,000 people die from it.(WHO)
- Yemen. Yemen is known for being one of the countries with the most Cholera cases.
- In India, 2020 resulting in **approximately 45,759 cholera cases** and 263 (0.6%) deaths

Diarrhoeal Diseases Control Programme

- National Cholera Control Programme 1980-81
- Oral Rehydration Therapy Programme -1986-87

MALARIA

MALARIA

- Malaria is a life threatening disease
- caused by parasites
- transmitted to people through the bites of infected female Anopheles mosquitoes
- its preventable and curable
- In 2019, 299 million cases of malaria reported worldwide
- Children aged under 5 years are the most vulnerable group affected by malaria
- In 2019, African region was home to 94% of malaria cases and deaths

SYMPTOMS

- Fever
- Headache
- Chills
- Severe anemia
- Respiratory distress
- Multi organ failure

Risk?

- In 2019, nearly half of the world's population was at risk of malaria
- Most of the cases reported in Saharan Africa
- Infants
- Children under 5 years old age
- Pregnant women
- HIV/AIDS Patients
- non-immune migrants
- Mobile populations
- Travellers

Statistics

- World Malaria Report :- 30 November 2020, there were 229 million cases of malaria in 2019 compared to 228 million cases in 2018.
- Malaria deaths 409000 in 2019 compared with 411000 deaths in 2018
- In 2019 , African region was home to 94% of all malaria cases and deaths
- In 2019, 6 countries accounted approximately half of all malaria deaths world wide
- Nigeria 23%

Statistics

- Democratic Republic of the Congo 11%
- United Republic of Tanzania 5%
- Burkina Faso 4%, Mozambique 4% and Niger 4%.
- In 2019; 67% children under 5 years of age reported malaria

Transmission

- Transmitted through the bites of female Anopheles mosquitoes
- 400 different species of Anopheles mosquito
- Around 30 are malaria vectors
- The intensity of transmission depends on factors related to the parasite, the vector, the human host, and the environment
- Also depends on climatic conditions (affect the no. and survival)
- Human immunity

Prevention

- Vector control
- Insecticide treated mosquito nets
- Indoor residual spraying
- Antimalarial drugs

Sulfadoxine-pyrimethamine, Chemoprophylaxis

Diagnosis and Treatment

- Early diagnosis and treatment of malaria reduces disease and prevents deaths
- Artemisinin based combination therapy
- Parasite based diagnostic testing
- Antimalarial; drug resistance
- Surveillance
 - Tracking of the disease and programmatic responses
 - Prevent outbreaks and resurgences, track progress
- Elimination
- Malaria free – United Arab, Emirates (2007), Algeria(2019), El Salvador (2021)

The Malaria Vaccine Implementation Programme

- RTS,S/AS01 is a vaccine

AIDS

AIDS

- Acquired Immuno Deficiency Syndrome
- Fatal illness caused by a retrovirus known as the human Immuno-deficiency virus(HIV)
- HIV breaks down the body's immune system, leaving the victim vulnerable to a host of life-threatening opportunistic infections, neurological disorders, or unusual malignancies
- AIDS recognized as an emerging disease only in the early 1980s, it rapidly established during the 21st century
- AIDS has evolved from a mysterious illness to a global pandemic which has infected tens of millions people
- Europe and Central Asia, the numbers of people acquiring HIV infection and dying from HIV related causes continue to increase.

Types of HIV epidemics

- According to WHO and UNAIDS has defined different types of HIV epidemics,

Low-level HIV epidemics

- HIV may have existed in many years, it has never spread to substantial levels in any sub-population.
- Recorded infection is largely confined to individuals with higher risk behavior e.g. sex workers, drug injectors, men having sex with other men.
- Numerical proxy: HIV prevalence has not consistently exceeded 5% in any defined sub-population.

Concentrated HIV epidemics

- HIV has spread rapidly in a defined sub-population, but it is not well- established in the general population.
- Active networks of risk within the sub-population
- The future course of the epidemic is determined by the frequency and nature of links between highly infected sub-populations and the general population
- Numerical proxy: HIV prevalence is consistently over 5% in at least one defined sub-population but is below 1% in pregnant women in urban areas.

Generalized HIV epidemics

- HIV is firmly established in the general population.
- Sub-populations at high risk may contribute disproportionately to the spread of HIV, sexual networking in the general population is sufficient to sustain an epidemic independent of sub-populations at higher risk of infection
- Numerical proxy: HIV prevalence consistently over 1% in pregnant women
- On the verge of fourth decade of the AIDS epidemic, the world had turned the corner-it has halted and begun to reverse the spread of HIV
- HIV incidence is the key parameter that prevention efforts aim to reduce, since newly infected persons contribute to the total number of persons living with HIV, they will progress to disease and death over time.
- Since 1997, the annual new infections peaked to 3.2 million cases globally, the number of new infections has fallen to 1.7 million in 2019.

Continues.....

- This reduction in HIV incidence reflects natural trend of epidemic, as well as the result of prevention Programmes resulting in behavioral changes in different contexts
- Sexual behavior, programme for people who inject drug
- Gender violence, sexual violence increase women's vulnerability to HIV, and women especially the younger women are biologically more susceptible to HIV
- The UNAIDS 2016- 2021 strategy is a bold call to action to get on the “ Fast –Track”
- The strategy focuses on the unfinished agenda
- Its a call to reach the 90-90-90 treatment targets, to close the testing gap and protect the health of the people living with HIV
- The Sustainable Development Goal target is to end the AIDS epidemic by 2030

India

- The estimated adult (15-49) years HIV prevalence trend had been declining in India since the epidemic 's peak in the year 2000 and has been stabilizing
- 2019 was 0.22 % (0.24 % among adult males and 0.20% for females)
- At the sub national level , three states with the highest adult HIV prevalence
- Mizoram- 2.32%
- Nagaland- 1.45%
- Manipur-1.18%
- High adult prevalence rate state are
- Andhra Pradesh-0.69%
- Meghalaya-0.54%

Continues.....

- Telangana-0.49%
- Karnataka-0.47%
- Delhi-0.41%
- Maharashtra-0.36%
- Nationally, 23.48 lakh PLHIV in 2019
- Maharashtra was estimated high number of PLHIV(3.96 Lakh)
- Andhra Pradesh 3.14 lakh
- Karnataka 2.69 lakh
- Uttar Pradesh 1.69 lakh

Continues.....

- Maharashtra – estimated highest number of new HIV infections (8.54 thousand)
- Bihar- 8.04 thousand
- Uttar Pradesh- 6.72 thousand
- West Bengal- 3.97 thousand
- Gujarat-3.37 thousand cases
- In 2019, 58.96 thousand AIDS related deaths in the country
- Andhra Pradesh – 11.43 thousand deaths

Key Populations affected in India

Hijras/Transgender people and HIV

- HIV prevalence among TG people in India was estimated to be 3.1% in 2017
- 68% of HIV positive TG people are aware of their status
- 2017, NACO reported around 45% of TG people and Hijras were receiving targeted interventions

Migrant Workers and HIV

- 7.2 million migrant workers in India, 0.2% are living with HIV
- In 2014, UNAIDS reported 75% of women testing positive have a husband who is a migrant labourer
- 2017, HIV prevalence among the wives of migrant workers in rural northern India was higher than among women in the general population at 0.59%

Truck Drivers and HIV

- NACO estimated that 0.2% of truck drivers were living with HIV in 2017- 18
- NACO also categorizes truck drivers as a bridge population because they often have unprotected sex with high-risk groups
- That increases the risk of transmitting HIV into the general population
- 2015, 49% of truckers in central India reported paying for sex of whom 21.5% had a sexually transmitted infection
- HIV testing among truck drivers remains low, 21.74% in 2016

Epidemiological Features

Agent Factors

- Agent: The virus first identified was called “ lymphadenopathy-associated virus(LAV)
- Researchers in USA called it “ human T-cell lymphotropic virus III
- In May 1986, International Committee on the Taxonomy gave a new name- “ Human Immunodeficiency Virus(HIV)
- Its a protein capsule containing two short strands of genetic material(RNA) and enzymes
- The virus replicates in actively dividing T4 lymphocytes
- The virus has unique quality to destroy human T4 helper cells, a sub-set of human T-Lymphocytes
- The virus is able to spread throughout the body
- It can pass through the blood-brain barrier and can then destroy some brain cells

Agent Factors

Reservoir of infection

- These are cases and carriers.
- Once a person is infected, the virus remains in the body life-long.
- The risk of developing AIDS increases with time
- HIV infection can take years to manifest itself, the symptomless carrier can infect other people for years.

Source of infection

- The virus has been found in greatest concentration in blood, semen and CSF
- Lower concentrations have been detected in tears, saliva, breast milk, urine and cervical and vaginal secretions
- HIV has also been isolated in brain tissue, lymph nodes, bone marrow cells and skin

Host Factors

AGE

- Most cases have occurred among sexually active persons aged 20-49 years
- This group represents the most productive members of the society, and those responsible for child-bearing and child-rearing

SEX

- In North America, Europe and Australia, about 51% of cases are homosexual or bisexual men
- In Africa, the sex ratio is equal
- Certain sexual practices increases the risk of infection more than others
- Example:- Multiple sexual partners, anal intercourse and male homosexuality
- Higher rate of HIV infection found in Prostitutes

High Risk Group

- Male homosexuals and bisexuals, heterosexual partners
- Prostitutes
- Intravenous drug abusers
- Transfusion recipients of blood and blood products
- Haemophiliacs and clients of STD

Immunology

- The immune system disorders associated with HIV infection/AIDS are considered to occur primarily from the gradual depletion in a specialized group of white blood cells (Lymphocytes) called T helper or T4 cells.
- These cells play a key role in regulating the immune response
- HIV selectively infects T-helper cells
- T-helper cells are destroyed
- Consequently people with AIDS tend to have low overall white blood cell count
- Reduced cellular immunity.
- Lymphocyte count below 500/cu.mm
- Those with antibodies to HIV, usually will have too few of HIV antibodies
- These antibodies are also ineffective against the virus

Mode of Transmission

Sexual Transmission

- Any vaginal, anal or oral sex can spread AIDS
- Unprotected intercourse with an HIV infected person exposes the uninfected partner to the risk of infection
- Anal intercourse carries a higher risk of transmission than vaginal intercourse
- Because its more likely to injure tissues of the receptive partner
- For vaginal sex the risk is greater when women is menstruating
- Exposed adolescent girls and women above 45 years of age are more prone to get HIV infection
- An STD in either the HIV negative or the HIV positive partner facilitates the transmission of HIV
- The risk of transmission is 8-10 times higher
- If an STD, in the genital or perineal region of the uninfected partner, it becomes far easier for HIV to pass into his or her tissues

Blood Contact

- AIDS is also transmitted by contaminated blood
- Contaminated blood is highly infective when introduced in large quantities directly into the blood stream
- The risk of contracting HIV infection from transfusion of a unit of infected blood is estimated to be over 95 %
- Contaminated needle, syringe or any other skin – piercing instrument is very much lower than with transfusion
- Needle sharing – in drug users
- Ear-piercing, tattooing, acupuncture can transmit the virus, if the instrument previously used and not sterilized of an infected person

Maternal – foetal transmission

- HIV may pass from an infected mother to her foetus through the placenta, breast feeding or during the delivery
- The risk of infection is higher if the mother is newly infected, or already developed AIDS
- HIV infected infants and children progress rapidly to AIDS
- Transmission of HIV from mother to child can be prevented almost entirely by anti-retroviral drug prophylaxis
- Elective caesarian section before onset of labour and rupture of membranes
- Refraining from breast feeding

Incubation Period

- The natural history of HIV infection is not yet fully known
- Current data suggest that the incubation period is uncertain
- The virus can lie silent in the body for many years

Diagnosis of AIDS

CLINICAL

WHO case definition for AIDS surveillance

- For the purpose of AIDS surveillance an adult or adolescent (>12 years of age) is considered to have AIDS
- If at least 2 of the following major signs are present in combination with at least 1 of the minor signs
- These signs are not known to be due to a condition unrelated to HIV infection

Children

- The case definition for AIDS is fulfilled if at least 2 major signs and 2 minor signs are present
- Major signs:- Weight loss or abnormally slow growth
- Chronic diarrhea for more than 1 month
- Prolonged fever for more than 1 month
- Minor signs:- Generalized lymph node enlargement
- Recurrent common infections e.g. ear infection
- Persistent cough
- Generalized rash

Expanded WHO case definition for AIDS surveillance

- >10% body weight loss or cachexia, with diarrhea or fever, or both, intermittent or constant, for at least 1 month, not known to be due to a condition unrelated to HIV infection
- Cryptococcal meningitis
- Pulmonary or extra-pulmonary tuberculosis
- Clinically diagnosed life threatening or recurrent episodes of pneumonia, with or without aetiological confirmation
- Invasive cervical cancer

Laboratory Diagnosis

- Screening Tests : Screening tests must be sensitive enough to record all “ True positive”, specific enough to record few “false positive”
- At present two different tests are used
- Sensitive test is used to detect the HIV-antibodies
- Second Confirmatory test is used to weed out any false positive results
- The first kind of test is normally the ELISA
- The confirmatory test usually Western Blot:- Detecting specific antibody to viral core protein and envelop glycoprotein

Virus Isolation

- A test for the virus itself would eliminate the painful uncertainty of AIDS infection
- HIV can be recovered from cultured lymphocytes
- This type of testing is very expensive and requires extensive laboratory support
- The current trend in HIV –antibody tests is towards simple and cheap
- Reliable kits, results can be read on the spot without much waiting and without need laboratory backup
- HIV self testing kits are available in the market

Prevention

Education

- Until a vaccine or cure for AIDS is found, only means at present available is health education
- Make people life-saving choices
- Avoiding indiscriminate sex
- Using condoms
- Avoid use of razors and toothbrushes
- Sharing of needles among drug users
- Women suffering from AIDS and at high risk of infection should avoid to becoming pregnant
- All mass media channels should be involved in educating the people on AIDS

Prevention

Combination HIV prevention

- Combination prevention Programmes use a mix of biomedical, behavioral, and structural interventions
- To meet the current HIV prevention needs of particular individuals and communities
- Impact on reducing new infections
- Male and female condoms
- Needle and syringe programme

Blood Borne HIV Transmission

- All blood should be screened for HIV 1& HIV 2 before transfusion
- Transmission of infection to haemophiliacs
- Strict sterilization practices should be ensured in hospitals and clinics
- Pre-sterilized disposable syringes and needles should be used

Antiretroviral Treatment

- ART is one of the most important effective treatment therapy that used to prevent and reduce the viral load of HIV
- **Nucleoside reverse transcriptase inhibitors(NRTIs)**
Abacavir(ABC), Didanosine(ddI), Emtricitabine(FTC)
- **Nucleotide reverse transcriptase inhibitors(NtRTIs)**
Tenofovir(TDF)
- **Protease inhibitors(PIs)**
Atazanavir + ritonavir (ATV/r)
Darunavir + ritonavir (DRV)r

Post-exposure prophylaxis

- PEP for HIV consists of a comprehensive set of services to prevent infection developing in an exposed person
- First aid care, counselling and risk assessment
- HIV testing and counselling
- Depending on the risk assessment, the short term (28 days) provision of antiretroviral drugs, with support and follow-up

Eligibility for post- exposure prophylaxis

- Offered, and initiated as early as possible, to all individuals with exposure that has the potential for HIV transmission and ideally within 72 hours
- Assessment for eligibility should be based on the HIV status of the source , and include background prevalence and local epidemiological patterns

PEP Regimen

- Three drug PEP regimens are now the recommended regimens for all exposures owing to the safety and tolerability of new HIV drugs
- The preferred HIV 3 drug PEP regimen is raltegravir (Isentress) 400 mg PO twice daily plus Truvada(Tenofovir DF 300 mg/emtricitabine 200 mg) 1 PO once daily
- All women of childbearing potential should have to undergo pregnancy testing prior to initiation of PEP
- A non- pregnant women of child bearing potential who is prescribed dolutegravir should be counselled to use an effective birth control method until she completes the PEP regimen

National AIDS Control Programme

- National AIDS Control Programme was launched in India in the year 1987
- The Ministry of Health and Family welfare has set up National AIDS Control Organization(NACO) as a separate wing
- To implement and closely monitor the various components of the programme
- The aim of the programme is to prevent further transmission of HIV
- To decrease morbidity and mortality associated with HIV infection
- Minimize the socio-economic impact from HIV infection
- 1986- first case reported

NIPAH VIRUS INFECTION

NIPAH VIRUS INFECTION

- Nipah virus is a zoonotic virus, an emerging infectious disease caused by virus of the family Paramyxoviridae, genus Heripavirus.
- It gets its name from the village in Malaysia where the person from whom the virus was first isolated succumbed to the disease in the year 1999
- Nipah virus infection was initially isolated and identified in 1999 during an outbreak of encephalitis and respiratory illness among pig farmers in Malaysia and Singapore
- In 2001, it was again identified as the causative agent in the outbreak of human disease in Bangladesh and India.
- Since then it has been reported almost annually in Bangladesh and many times in India
- A recent outbreak in India was in Kerala in the month of May 2018, recorded 19 cases with 17 deaths

MODE OF TRANSMISSION

- Transmission of Nipah virus to humans may occur after direct contact with infected bats,
- infected pigs or from other Nipah virus infected people(as reported in Bangladesh and India) where it is seen in the family and caregivers of the infected patients
- Transmission also occurs from direct exposure to infected bats
- Example is consumption of raw date palm sap contaminated with infectious bat secretions and excretions
- Fruit bats of the family Pteropodidae, particularly species belonging to Pteropus genus are the natural host for Nipah virus. There is no apparent disease in fruit bats

INCUBATION PERIOD

- Usually 4 to 14 days

CLINICAL FEATURES

- Human infections ranges from asymptomatic infection to acute respiratory infection and fatal encephalitis
- Infected people initially develop fever, headache, myalgia, vomiting and sore throat.
- This can be followed by dizziness, drowsiness, altered consciousness and neurological signs that indicate acute encephalitis
- some people can also experience atypical pneumonia and severe respiratory problems, including acute respiratory distress
- Encephalitis and seizures occurs in severe cases, progressing to coma within 24 to 48 hours
- Most people who survive acute encephalitis make a full recovery
- Long term neurological consequences such as seizure disorder and personality changes
- A small number of people who recover subsequently relapse or develop delayed onset encephalitis

DIAGNOSIS

- The main tests are real time Polymerase chain reaction (RT-PCR) from bodily fluids and antibody detection via ELISA
- Other tests used include polymerase chain reaction assay, and virus isolation by cell culture

TREATMENT& PREVENTION

- No drug or vaccine specific to Nipah virus is available
- Intensive supportive care is recommended to treat severe respiratory and neurological complications
- In the absence of a vaccine the only way to reduce or prevent infection in people is by raising awareness of the risk factors and educating people about the measures they can take to reduce exposure to Nipah virus.